

THE IRON AGE

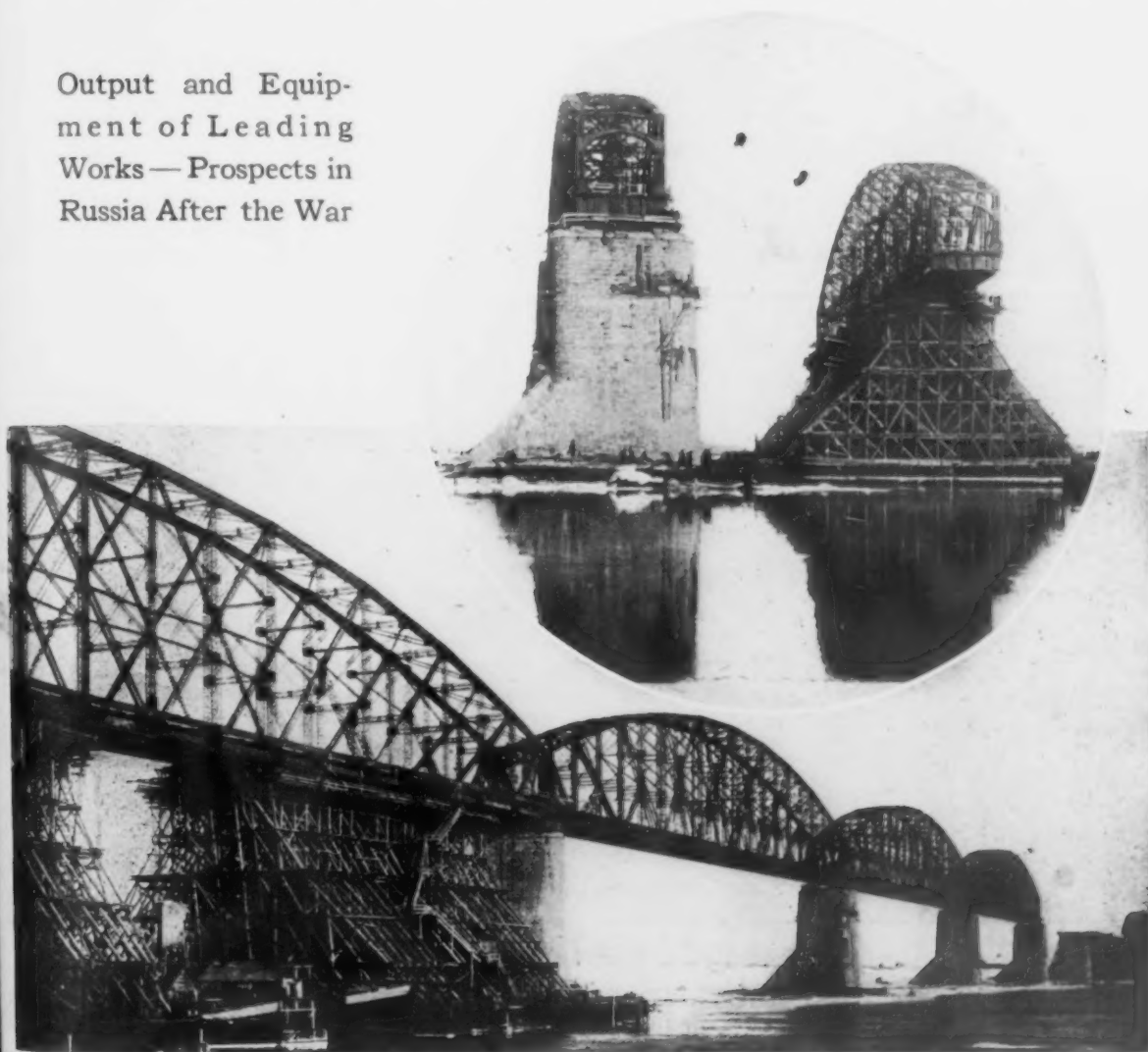
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Pre-War Russian Iron and Steel Plants

Output and Equip-
ment of Leading
Works — Prospects in
Russia After the War



The Simbirsk Bridge on the Volga Fabricated and Erected by the Hughes Co.

ALEXANDRE GOUVY, who recently made a tour of the various steel centers of the United States, delivered an important paper early this year before the Society of Civil Engineers of France. It was entitled the "Iron and Mineral Industry of Russia in 1913 and Its Future Development," and is based on a personal study of the various mines and steel plants of that country. The paper is voluminous and deals with the coal and manganese ore industries also. We reproduce herewith abstracts of a translation of the main features of the paper as it appeared in the London *Iron and Coal Trades Review*. The illustrations are from original photographs loaned THE IRON AGE by M. Gouvy.

The iron and steel works in Russia may be divided into five groups, as follows: (1) Northeastern and Baltic group, with Petrograd, (2) the Urals and the northeast, (3) the Center, with Moscow, (4)

the south, including the Donetz district, (5) Poland. The output of the different groups in 1913 was as given in Table 1.

Table 1—Output of the Various Groups in 1913, in Tons

Group	Pig Iron	Bessemer Ingots	Open-Hearth Ingots	Beams, Shapes, Forgings, etc.	Plates and Sheets	Rails
1...	500	.....	168,500	175,430	36,500	180
2...	923,700	45,100	890,500	244,340	277,700	133,440
3...	250,900	100	243,000	198,780	104,830	.....
4...	3,101,290	750,900	2,031,200	1,268,700	448,100	514,000
5...	418,800	.....	588,500	328,300	84,640	4,740
Total	4,695,100	796,100	3,921,700	2,215,550	951,770	652,560

In Group 1 the pig iron (charcoal) was produced at Segovets, in the government of Olonets; the steel ingots, 113,300 tons (of which the Putilof works at Petrograd produced 70,800 tons), in three private works and three government works (55,200 tons).

In Group 2 the pig iron was produced by some 20 private companies (761,200 tons) and 12 govern-

ment plants (162,500 tons); the open-hearth steel by 19 private plants (809,100 tons) and in 13 government plants (81,400 tons). The number of private plants is 69. Some of the plants, both private and state-owned, produce puddled iron (23,608 tons); also steel castings (3970 tons); one plant (at Nizhne Saldinsk) Bessemer steel (45,100 tons) and a government plant crucible steel (430 tons), besides the tonnage given in the table.

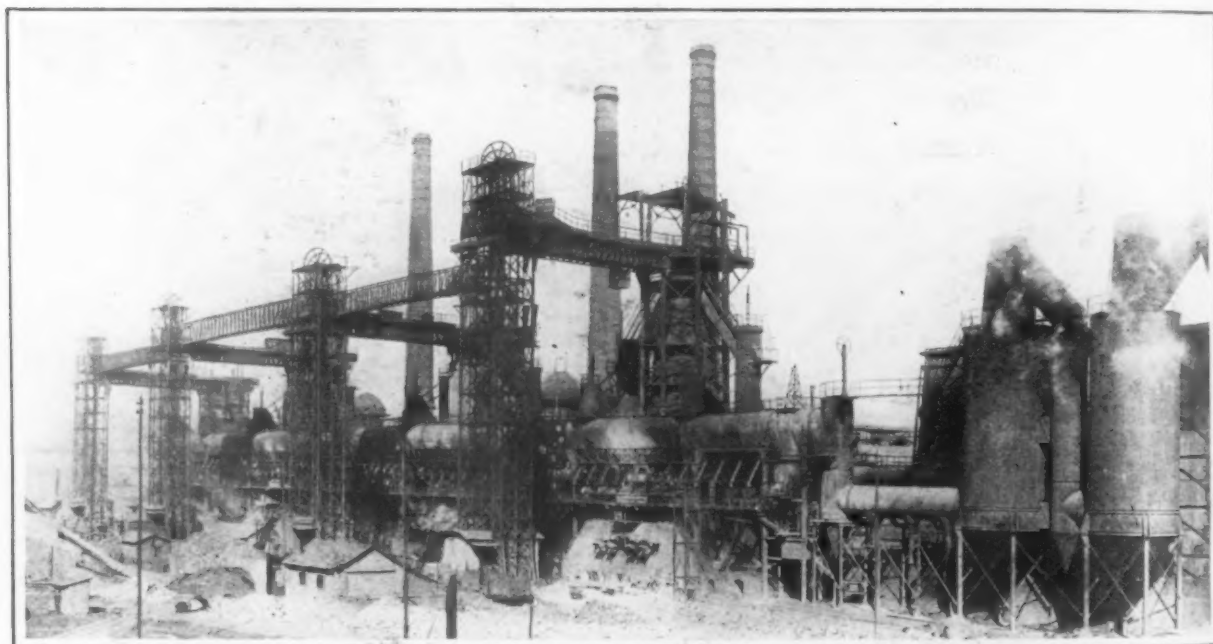
All the pig iron was produced with charcoal for fuel, on account of the total want of coke, which accounts for the low output of this group. The fuel for the open-hearth furnaces was torrefied wood, which is wood parched in special kilns built of bricks with central firing. Some of the districts have used lignite as fuel even for making steel. Torrefied wood has also been used for puddling.

The mineral wealth of the Urals cannot be developed more fully until coke can be delivered more cheaply than at present to the blast furnaces, either by water or by rail. Charcoal iron should only be produced for special purposes, and in furnaces situated on the banks of rivers and canals, so that the timber could be supplied to them by rafts.

The Kolomna locomotive works recently amalgamated with the Sormovo works are in this group.

It is at the Moscow Co.'s works (Goujon) that the first tinplate mill in Russia was installed, in 1908, with an English crew. The five open-hearth furnaces at these works are fired with naphtha, and seem to work satisfactorily, as the subsequently installed gas producers, using coal, are rarely used. The Viksa Co., in the government of Nizhni-Novgorod, was a German concern. It produced principally merchant bars and certain special products.

Group 4, comprising the whole of the southern works, including those in the Donetz region, forms the backbone of the Russian iron and steel industry, producing about 66 per cent of the total output of pig iron, 52 per cent of all the open-hearth steel, and 94 per cent of the converter metal in the whole country. The tonnages given in our summary table were produced by about 16 companies, including the Hartman Locomotive Works at Lugansk, who have their own steel works, with an annual output of 61,300 tons in 1913. The blast furnaces belonging to this group consumed 3,680,000 tons of coke in producing the 3,101,200 tons of pig iron and 32,390



Donetz Forge Co.'s Blast Furnaces at Druzhkova

Table 2 gives the six largest private producers in this group, both of pig iron and steel, in 1913.

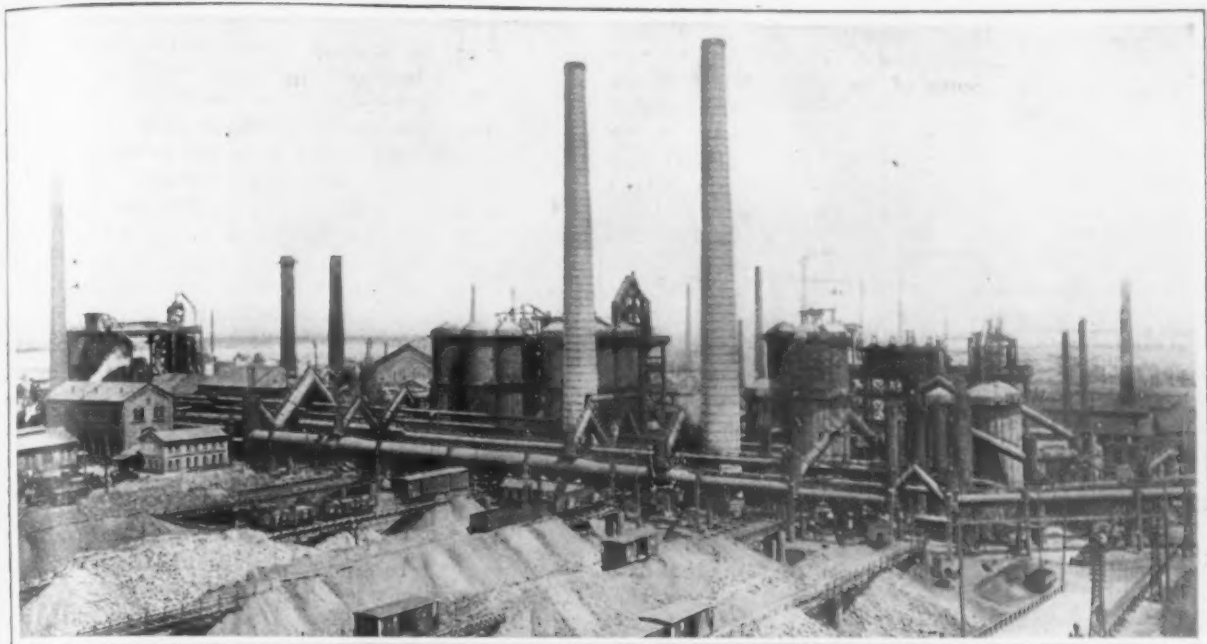
Table 2—Six Largest Private Producers in Group 2

	Pig Iron, Tons	Steel, Tons
Bogoslovsk Company (Nadezhda works)....	169,300	180,000
Count Demidoff (San-Donato) (also 45,100 tons of Bessemer steel at Saldinsk).....	91,000	53,800
Yakovley Company	58,700	40,000
Kama Company	56,200	78,100
Balashov Company, near Ufa.....	53,000	20,800
Shuvalov Group at Lisva.....	51,800	57,000
Abamelek-Lazarev Group	29,500	67,900
Verkh-Izetsk Company	28,800	92,000
Pashkov Company, at Bieloretzk.....	20,000	66,000

In the central group, Group 3, including the Moscow district, the largest pig-iron producing company is the Belgian Co. at Tambof, producing 115,400 tons of pig iron per annum (1913). The open-hearth steel was produced by four plants, their shares ranging from 48,000 tons (Viksa Co.) to 69,400 tons (Goujon works at Moscow). The Bessemer steel was made in the Sormovo works near Nizhni-Novgorod. This plant, and another at Moscow, turned out also 10,700 tons of steel castings not included in the tonnages in our summary table. One company in this group produced 1800 tons of puddled iron.

tons were used in foundries and other shops in 1913. As the whole of the coke output of the Donetz Basin was about 4,400,000 tons in that year, there remained about 687,000 tons available for the furnaces of the Central group, Group 3, and the foundries at Moscow, Petrograd and elsewhere. If their requirements are to be satisfied in the future, and the output of pig iron is at the same time to be increased, the mines yielding coking coal will have to be exploited more intensively, which, however, could only be done up to a certain limit, as the more recent seams have not yet been fully disclosed.

Coking was carried on in a somewhat primitive manner up to 1913, but in that year matters were greatly improved by the introduction of by-product recovery processes and regenerative furnaces. Much more, however, remains to be done in this respect, as with the development of agriculture in the country, sulphates of ammonia will be required in increasing quantities for manuring, as phosphates can only be supplied by the two or three steelworks producing basic steel (199,300 tons in 1913, included in the tonnage in our summary table) from Kertsk ores. In 1912 Russia imported 184,300 tons of basic



Plant of the Dnieprovsk Co. at Kamenskoie

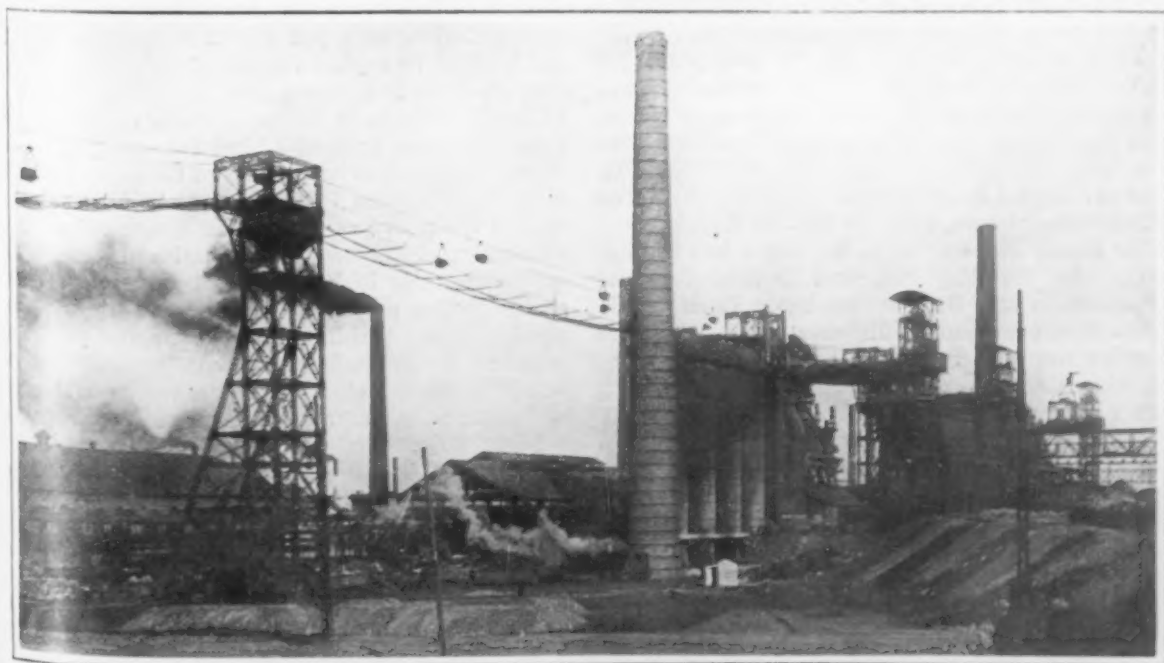
slag, the bulk from Germany, Great Britain and Belgium direct, and a portion of unknown provenance through Holland.

The author gives particulars in great detail of the principal works in Group 4. One of the most up-to-date plants is that at Kamenskoie, on the Dnieper, with additional furnaces at Kadievka, belonging to the South Russian Dnieprovsk Metallurgical Co., in the government of Ekaterinoslav. The company's output in 1913 was 418,000 tons of pig iron, 138,000 tons of converter steel, and 252,500 tons of open-hearth steel. The appliances at these works were modeled after those at the Cockerill works at Seraing, in Belgium, full use being made of the blast furnace gases for engines driving blowers and dynamos. The greater part of the rolling mills is driven by electric motors, with an aggregate power of 11,950 hp.

The new wire-rod mill is the most powerful in Russia, dealing with billets weighing 470 lb., and producing 132 tons of wire rods 5.5 mm. (1-5-in.) in diameter per shift, while the old mill was only

able to handle 3 cwt. billets, and did not turn out more than 80 tons per shift. Bessemer steel is made at these works in three 13-ton converters, with 150-ton mixer, principally for rails. The open-hearth plant comprises four old 25-ton furnaces and five new 50-ton furnaces, with another 150-ton and a new 500-ton heated mixer.

The next plant of importance is the Alexandrovsky works of the Briansk Co. at Ekaterinoslav, with six blast furnaces of a total capacity of 786 tons in 24 hr., with inclined chargers of the Gogotzky type. The six blowers are driven by four-cycle gas engines, with four blowers driven by steam engines in reserve. Electric current (three-phase 3100 volts) is generated at these works by Curtis steam turbines, fed by boilers fired with furnace gas, the total output of the five generators being 13,500 kw., of which 1350 kw. are transformed into direct current. All the rolling mills are driven by electric motors aggregating 7240 hp. and other motors aggregating 12,015 hp. drive pumps, a briquetting plant and sundry other machinery. The



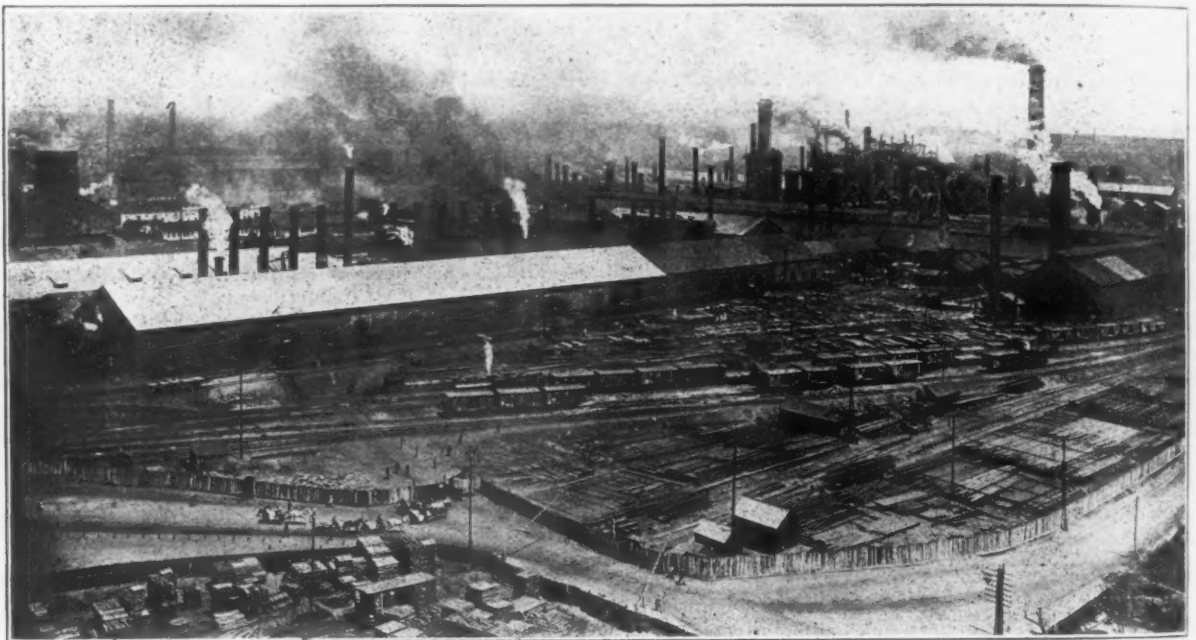
Charging Coke by Cable at the Blast Furnaces at Makeevka

blooming and rail mills, however, are still driven by steam engines totaling 4000 and 5000 hp. respectively. The two reversible mills are electrified.

The author publishes an interesting table showing the comparative cost of steam raising in the two principal blast-furnace plants of the group, with about the same output of pig iron per annum (South Russian Co. 418,000 tons against the Briansk Co.'s 410,600 tons). The former company's engines total 12,500 hp. using gas, and 1500 hp. using steam, while the Briansk Co. has 20,000 hp. installed, all steam and no gas. Taking the same number of working hours (5000) per annum for both companies, the South Russian Co. spends (at par exchange) some £7920 on raising steam, as against the Briansk Co.'s expenditure of £76,663. Of this sum, however, some £50,528 could be saved, according to the author, if the exhaust steam from the two reversible engines were utilized for driving low-pressure turbines. The Bessemer plant includes three converters of 12 tons each, with a 400-ton mixer heated with blast-furnace gas. The open-hearth plant consists of four 30-ton furnaces, two

The Hughes works (known as the Novorossiisk Co.) at Yuzovo were established by a company formed by John Hughes in 1869, with a share capital of £300,000 sterling. At first the company devoted its exclusive attention to coal mining; and the iron and steel works were not started till 1881, when at the same time the company secured iron ore supplies from Krivoi-Rog. The company's coal reserves, which are estimated at 870,000,000 tons, include four seams, three of which yield excellent coking coal. Until 1913 some 330 ordinary ovens were at work, with a coking time of 40 to 48 hours, the "waste flames" from which were used for steam raising. In 1914, however, the construction of 150 Coppée ovens was begun, a portion of which is now at work, and when all are completed their annual output will total 270,000 tons.

There are four blast furnaces, one producing 200 tons and the other three 280 tons of pig iron each in 24 hr. for steel making. A fifth, of a daily capacity of 400 tons, is under construction with inclined automatic charges of the McKee type. The 14 old non-condensing blowing engines and 64 Lan-



General View of the Steel Plant of the Hughes Co. at Yuzovo

40-ton furnaces and one 50-ton furnace, with a subsequently added 200-ton mixer. A new plant for building bridges, roofs and other structural work has recently been added to the Alexandrovsky works, which will double the former output of 12,000 tons per annum. A plant turning out 10,000,000 slag bricks per annum is about to be completed by a large Portland cement company, the first in Russia.

The Russo-Belgian Co. at Enakievo has the advantage over the other two, that its blast furnaces are located in the Donetz coal basin itself, while the other two are some distance away (200 and 175 miles respectively). On the other hand, these two competitors are nearer to the Krivoi-Rog iron mines (125 and 150 miles respectively), while they are some 325 miles from Enakievo. The special feature worth mentioning in connection with the Russo-Belgian plant is that the rolling mills are to a great extent driven by gas engines. The nine blowers are also driven by gas engines, with three steam units, representing about 28.6 per cent of the total power of the gas engines, as a stand-by. The Bessemer plant comprises two 9-ton converters, and the open-hearth plant four 25-ton and three 50-ton furnaces.

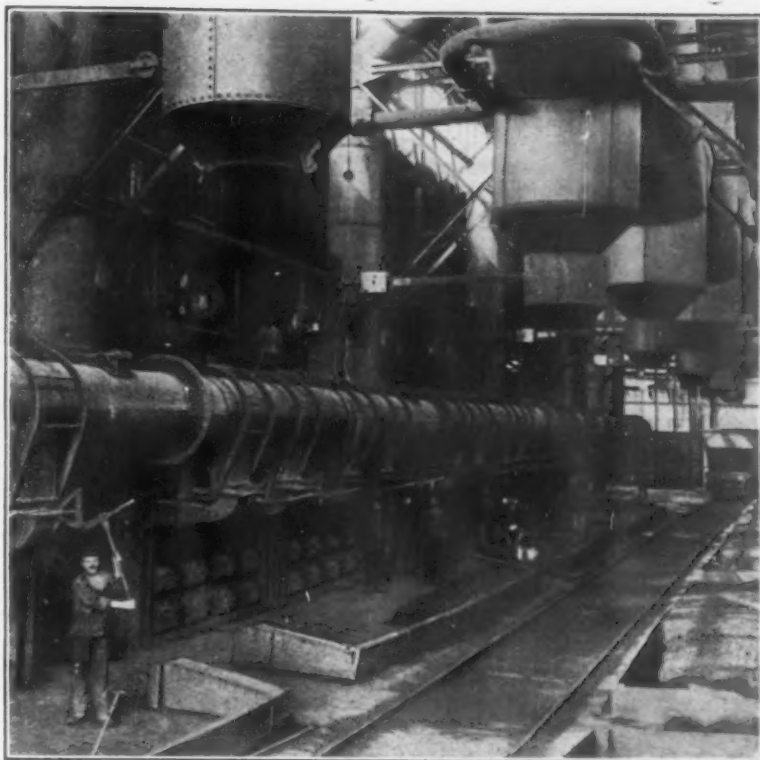
cashire boilers were put out of commission in 1915, and were to be replaced by six Brown-Boveri turbo-blowers of 3340 hp. each, two of which are already at work. Steam is to be supplied to them by 20 Babcock boilers, fired with blast-furnace gas, roughly cleaned of the heavier portion of its dust in inclined pipe lines. Owing to the exceptionally good situation of the works as regards an abundant supply of excellent coal, the use of large units of gas engines, expensive items in Russia, has been negatived, and all the motive power at the mine and works is supplied by steam turbines (two Curtis and two mixed pressure Zoelly turbines, the latter using in one plant the exhaust steam from the two reversible rail mill engines, in another the exhaust steam from the blowing engines of the blast furnaces). In one plant steam is raised with coke-oven gas, and in the other two with furnace gas.

The Bessemer plant is now standing idle, and has been replaced by open-hearth furnaces (five of 30 tons, three of 40 tons and two of 60 tons each) with two mixers. The rail mill is driven by reversible steam engines, all the other five mills by electric motors using current at 3000 volts. The bridge-building yard and wire works, although not so im-

portant as those at Briansk, are well equipped. The steel girders for the large bridge over the Volga at Simbirsk, about 7000 ft. long, were built in this yard.

The Donetz-Yurievka Co. has five blast furnaces at Yurievka, the blast being supplied in part by Cockerill gas engines. The coke is made on the spot. In these works, too, the Bessemer plant has finally been put out of commission, and the whole of the steel is now made in seven open-hearth furnaces (five of 30 to 35 tons each, one of 50 tons and one of 60 tons), working with 80 per cent of molten metal from the blast furnaces and 20 per cent of ore. The installation of gas engines and of turbo-generators for the partial electrification of the rolling mills has not yet been carried out. The steel works at Tsaritsyn-on-Volga, established in 1896 by the Ural-Volga Co., now amalgamated with the Yurievka Co., are supplied by the latter with all the pig iron required for steel making, and are running five furnaces of 30 tons, two of 20 tons and two of 5 tons each, for castings and special steels. All these are fired with naphtha, insuring high temperatures, and so are all the other furnaces, as well as the boilers in and about the plant, with the consequent absence of sulphur fumes and smoke.

The Makeevka works, originally (in 1898) established by a French company, vegetated for some time, until the company amalgamated with the colliery company of the same name, under the name of



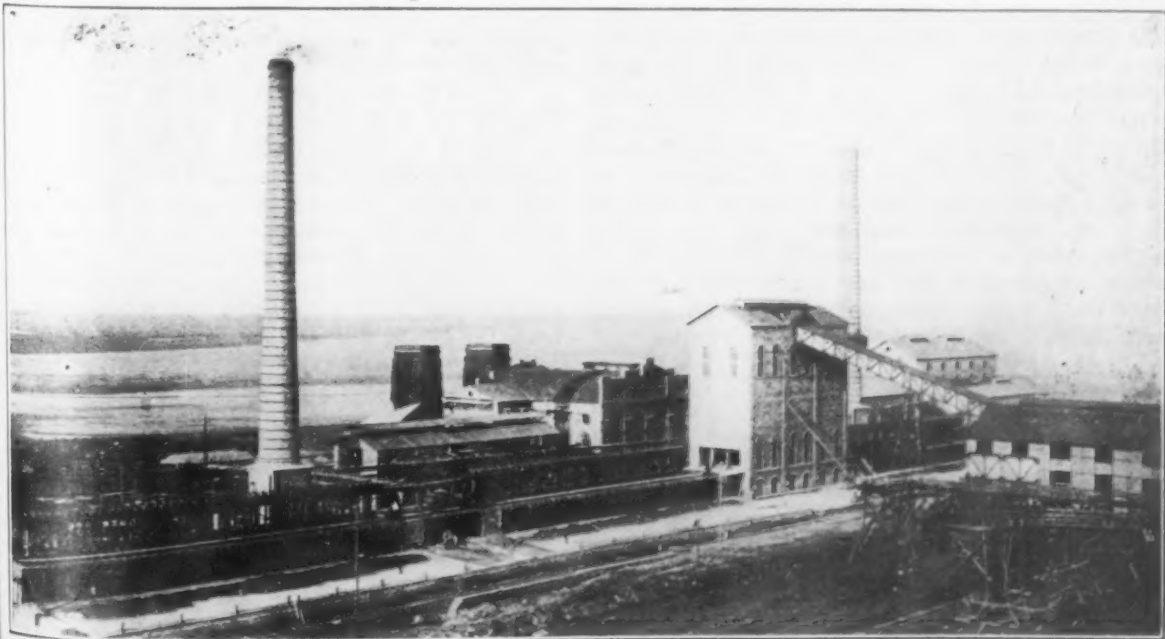
Boilers Fired by Blast-Furnace Gas at Hughes Co.'s Plant at Youzovo

Union Minière et Métallurgique de Makeevka. The coke for the three blast furnaces is brought from a distance of about 7000 ft. in skips, on a cableway, which empty themselves automatically into the hoppers of the chargers. The ore is filled by traveling gantries and grabs into large hopper-bottomed tubs, which are placed on trucks and lifted vertically above the furnace top.

The blast furnaces are water-cooled on the Burgers system. The blast is supplied by three gas blowers (1800

hp.) made by the Société Alsacienne, with three blowing engines (900 hp.) of the Creusot type as a stand-by. Three gas engines also drive the generators supplying 500-volt current for the rolling mills, while two turbo-generators of 1000 kw. and two steam sets, of 175 and 225 kw. respectively, are used for generating current at 3100 volts, for delivery at a distance. There is also at the colliery a reserve power station with turbo-generators, with boilers fired with coke-oven gas or coal in case of necessity.

The rail mill, two plate and sheet and continuous mills are still driven by steam engines, but one plate mill of eight stands of rolls is now driven by a 1000-hp. motor, using current at 3100 volts. The new mill for rolling shapes and merchant bars is driven by electric motors of an aggregate power of 4900 hp. The whole of the steel, including that for rails, is made in basic open-hearth furnaces (four of 30



By-Product Coke Plant, 180 Coppée Ovens, at the Hughes Co.'s Plant

tons and two of 45 tons each), using liquid metal from the blast furnaces. The plant comprises also two Héroult electric furnaces of 4 and 6 tons' capacity respectively, and six Harmet presses for special ingots.

The Union company runs also two foundries, one of them a modern pipe foundry, with an annual output of 16,000 tons of pipe (about 3 to 13½ in. diameter), and has recently acquired the Khartsisk works, where the plates rolled at Makeevka are welded into large tubes and boiler barrels by water gas.

Prospects After the War

The author, in discussing the prospects of the Russian iron and steel trades after the war, predicts an increased activity as soon as normal conditions are restored. Many new works have already been established, and existing ones have been enlarged to be able to cope with the increased amount of work to be done to replace German products. Germany had managed to swamp the Russian market not only with her imports, but also by the establishment in the country itself of numerous so-called Russian branches of her own industrial plants at home. These branches continued to be active after the outbreak of the war, and one of the ticklish problems will be how to get rid of the German interest and influence in the future.

The total imports of machinery of every kind into Russia rose from 139,846 tons in 1903 to 312,354 tons in 1913, 50 per cent of which in the latter year came from Germany. Russia in that year imported also 249 railroad cars and 122 steel boats of a total displacement of 35,800 tons. Her prospects are, therefore, very bright, especially with the good results already wrought by the restrictions on the consumption of alcohol.

The author gives a list of the principal engineering concerns existing in Russia in 1914 within the five iron and steel making groups, with the number of workmen employed and the business done by each concern, over and above the iron and steel works already enumerated by him. Special attention is drawn to the numerous companies of German origin in the Petrograd region, and to a certain exodus of the German element which had taken place during the war, quoting as an instance the great electric machinery works created at Kharkov by the Allgemeine Elektrizität Gesellschaft of Berlin, but turned into a Russian firm in 1916. A similar but more modest concern in the same town is of French origin.

Another French company, the Société Russo-Baltique de Constructions Navales at Revel (founded in 1912), has started new works at Taganrog, including a forge comprising 14 hydraulic presses of 150 to 400 tons each, and other finishing shops. Another group at Petrograd with a large amount of French capital absorbed has purchased more recently the Hughes mines and works, and is constructing works on a large scale near Yuzovo.

Finally, all the plants in Poland, in enemy occupation almost since the beginning of the war, were small. The tonnages given in our table do not include 2580 tons of steel castings, the output of two plants, and 50 tons of converter steel made by another plant in 1913. Two of the plants in that year made also 8350 tons of puddled iron. The largest producers in the group are the Hutabankova Co. (with 110,400 tons of pig iron and 167,000 tons of open-hearth steel in 1913) and the Hantke works at Czenstokhov (111,500 tons of pig iron and 89,000 tons of open-hearth steel in the same year).

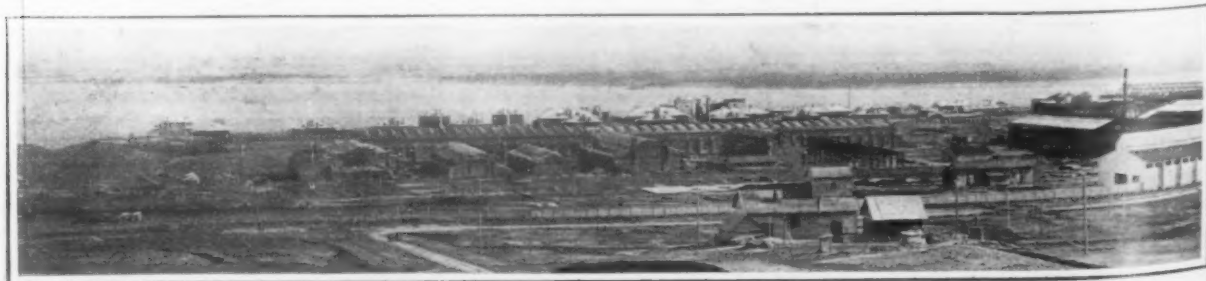
The Maltsev works near Ovoznaya, in the Moscow group, was arranging for a large development of its business and trade by the purchase of the Makeevka mines and iron and steel works.

One of the latest ventures is the new arsenal, built by the English Vickers company at Tsaritzyn, on the Volga, for the manufacture of large naval guns. The plant when completed will include four open-hearth furnaces of 50 tons each, three forging presses of 6000, 1500 and 1000 tons respectively, a forge with 15 power hammers, a large shop for hardening steel, rising about 150 ft. above ground level, with deep quenching pits, a pumping station on the river, etc.

The list of works in Group 1 includes those at Petrograd (the Putilof locomotive and engine works employing 8000 persons, the Nevsky shops for building boats and locomotives, etc., with 3500 workmen, the Baltic company building boats, engines, turbine construction, etc., with 5200 workers, etc.); those at Riga (Russo-Baltic Carriage and Wagon Works, employing 3000); at Reval (the same company's shipyard, employing 2500), and at Narva. Those in Group 2 (Urals) of any importance are mostly branches of the iron and steel works already mentioned, and comprise principally foundries.

Special mention should, however, be made of the South Ural company at Ust-Kataf, with 1200 workmen turning out railroad goods, cars and sundry other kindred work. Among the state-owned works in this group is that at Perm, employing 6300. The five lists only mention the most important companies. The total number of industrial establishments doing more than 50,000 roubles' worth of business (say £5,000) aggregate 182 in the five groups, and the business done by them in 1913 was over £23,000,000.

Of the world's output of pig iron, Russia in 1913 occupied the fifth rank, with 6 per cent, as against the United States with 40.2 per cent, Germany and Luxemburg with 25 per cent, and Great Britain with 13.6 per cent. The puddling process tends to disappear altogether in Russia, as everywhere else, and only 48,770 tons of wrought iron were produced in the country by puddling, etc., in 1913, as against 282,460 tons in 1903. One-half of this output came from the Urals.



Russian Vickers Co's Gun Plant at Tsaritzyn on the Volga

Power Plant Erected Under Difficulties

At the recent meeting in New Haven of the Connecticut sections of the American Society of Mechanical Engineers, a visit was made by the members to the Dixwell Avenue power plant of the Marlin-Rockwell Corporation. Built under the pressure of war demands, the particulars behind the development of this installation form a very noteworthy history, one that will remind many of similar experiences in meeting an extraordinary situation. An account of the difficulties encountered was given by C. C. Sibley, plant engineer.

In December a contract was awarded for the erection of a new factory and a power house of 1500 boiler

lights, building lighting systems, etc. In the boiler room are eight hand-fired boilers, two open-feed water heaters, and the necessary auxiliaries. To feed these, a coal conveyor to carry the coal from the cars to a coal crusher capable of crushing 40 tons per hour is provided. From the crusher it is taken to a 650-ton concrete and steel coal hopper, running the entire length of the boiler room. The buckets which carry up the coal come down empty on the opposite end of the boiler room, where they are used to take the ashes to a concrete ash hopper from which they are carted away. By means of this installation the coal is stored in the bunkers and the ashes removed by the same conveyor. Supplementing this is an automatic railway system, designed to store 5000 tons of coal throughout the yard at the rate of one car per hour.

"Criticisms are welcomed," said Mr. Sibley, "with



Photograph Taken Jan. 16



Photograph Taken March 23

DIXWELL AVENUE POWER PLANT OF THE MARLIN-ROCKWELL CORPORATION, NEW HAVEN, CONN.

hp. to be completed within ten weeks, or by March 12. At the same time the contract was let for the design, purchase and erection of the additional equipment for the boiler room, and work was started on a steel stack of 72 in. diameter and 125 ft. high of a self-supporting type.

Three second-hand 500 hp. engines direct connected to 375 kva. alternators, 2200 volts, 2-phase, were purchased in West Virginia. These engines had to be dismantled, shipped to Hamden and thoroughly overhauled. Two of the generators being water soaked had to be equipped with new coils and rewound. This was done and the generators were placed and in operation within two weeks. Shipment of four 240 hp. boilers was promised in six weeks and were installed according to schedule in February.

In spite of the difficulties due to the zero weather of last January and February, inability to get apparatus of any size quickly, owing to transportation difficulties, the plant was completed and the manufacture of electricity started on March 10, two days ahead of schedule. "We have a rare combination," said Mr. Sibley, "of new and second-hand equipment, all blended into one harmonious unit, which has operated 24 hours per day, except Sundays, without failure or shutdown. We have made changes under the most trying conditions and have still been fortunate in keeping the wheels turning."

A brief summary of the most important equipment follows:

Three angle-compound engines direct connected to three-phase, 110-volt, 60-cycle alternators; one 21-panel switchboard consisting of three panels to control exciters, four machine panels, one lighting panel, one station feed panel and 11 feeder panels, also a regulator for a. c. voltage control; one 10-ton crane which paid for itself in erecting the engines; one 5 kw. motor-generator set for furnishing direct current to telephone and clock boxes, magnetic chuck, etc.; one 12½ kw. motor generator exciter set for use with one engine and one 25 kw. motor-generator exciter set for use when more than one engine is at work; one 25 kw. steam driven exciter set to be used in case of emergency; one sub-switchboard for the control of magnetic chucks, outside

the object in view of helping us to operate this unit on a more efficient basis, that is, as efficient as any non-condensing plant can be operated and supply 200 hp. of high pressure steam as a side product."

History of the McKinley Memorial

The National McKinley Birthplace Memorial Association has issued a handsomely printed volume called "McKinley Memorial," giving the history of the beautiful memorial building erected in the city of Niles, Ohio, in honor of the martyred President, who was born near that city. The book contains half-tone engravings of the court of honor and marble statue of McKinley, of Henry Clay Frick, who contributed the memorial library; of Joseph G. Butler, Jr., president and guiding spirit of the association, and of busts of David Tod, Civil War Governor of Ohio and industrial pioneer; C. H. Andrews, leader in development of the coal, iron and railroads of the Mahoning Valley; B. F. Jones, founder of the Jones & Laughlin Steel Co.; John Hay, Secretary of State in President McKinley's Cabinet, and Theodore Roosevelt. An account of the dedicatory services with the address of ex-President William H. Taft is included, and Ambrose M. Robbins, long a member of the firm of M. A. Hanna & Co., Cleveland, has an interesting chapter on "Beginnings of a Great Industry," telling of the first blast furnaces and other iron plants of the Mahoning Valley. The volume is well printed and is a fitting record of a worthy undertaking carried to success through the untiring efforts of Mr. Butler.

Director General McAdoo has advised G. A. Tomlinson, of the Inland Waterways Commission, Birmingham, Ala., that contracts will be immediately let for the construction of craft for the Warrior River, to be of steel, especially adapted to mercantile as well as industrial service, and to take the place of the temporary wooden craft now used by the Government-operated line.

Formula for Strength of Basic Steel

Calculations Made from the Composition — Influencing Principal Elements—Application to Basic Steel

BY DR. ANDREW M'WILLIAM

FOR many years before coming to India the author was mildly interested in formulæ for calculating the tensile strength of steels of known composition and normal treatment, but found them all unsatisfactory for use on the very varied series and high range of tempers made at the University of Sheffield as well as on the general line of those produced commercially in steelworks in Sheffield.

On coming to India he felt the desirability, in connection with the work of inspection, of obtaining a formula which would give reasonably correct results within the range of the British standard specifications for structural steels, that is, 28 to 32 tons per sq. in. maximum (since altered to 28 to 33 tons), and this was fairly easily accomplished. When steels much above the British standard in tenacity came to be required in Sakchi the empirical formula broke down, and a strenuous endeavor was made to obtain one on a rational basis. It was felt that by closely estimating the tenacity of pure iron and the effects of the various elements present, and of their influences on one another, it should be possible to evolve a formula that would agree with the tensile strength obtained on the testing machine within about 1 ton for steels within the limits of the British standard specification for structural steels, and within about 2 tons for tempers above about 40 tons per sq. in. Assuming results for the various elements that were fairly well established for the lowest tempers, and deducting the totals from tests of very mild material, the strength of absolutely pure iron was estimated to be about 38,000 lb., or 17 tons per sq. in.

In all the calculations that follow the sections of the steel bars are assumed to be of the order of 1 in. round, or other sizes that would not differ much from these in tenacity, and the condition of the materials to correspond with that represented by the term "normalized." In stating the effect of any element of the tenacity of the steel the unit of the element will be taken at 0.01 per cent.

It seemed to be fairly generally recognized that

*From a paper presented at the meeting of the Iron and Steel Institute in London, Sept. 13, 1918. The author is metallurgical inspector, Government of India, Indian Munitions Board.

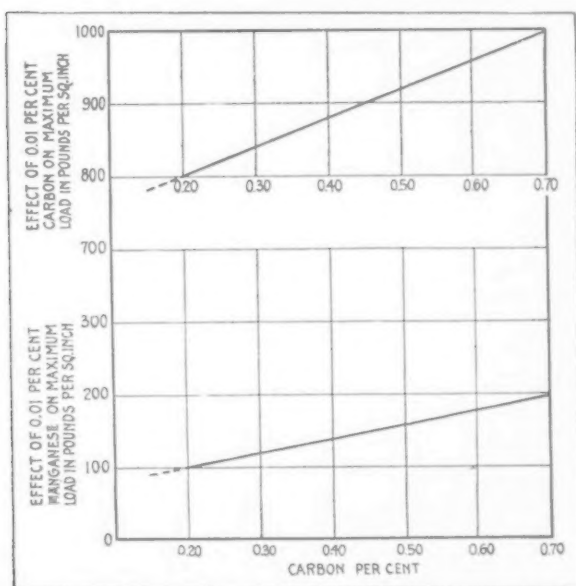


Fig. 1—Effects of 0.01 Per Cent of Carbon and of Manganese Respectively on Maximum Load in Pounds Per Square Inch of Original Section

phosphorus adds about 1000 lb. per unit, and this effect was accepted in the preliminary series of calculations, which pointed to the figure 100 lb. as being nearest to the effect of manganese in the lower tempers. The silicon in the steels was so low that it could be ignored, but afterward was estimated to be about 120 lb., and as sulphur is generally considered, and from the mode of its occurrence in the steel would be expected to have very little effect on the tenacity, its influence was ignored, especially as the sulphur in the steels was generally below 0.03 per cent.

In a series of carefully tested steels of from 20 to 26 per cent carbon this left the influence of the carbon at about 800 lb. per unit, so the first attempted rational formula for steels within the older British standard of 28 to 32 tons was:

$$\text{Maximum load in lb. per square inch of original section} = 38,000 + 800 C + 100 Mn + 1000 P.$$

When basic steels were made of from 33 to 50 or 60 tons per sq. in. the formula was tried and found, as with others, to fail. The problem of obtaining the separate effects of the added elements is a most complicated one, and is made still more difficult by the fact that results obtained in works practice on the testing machine, even when the test-piece itself is analyzed, vary more than the differences that one would care to allow between the general results of the calculations from the compositions and those obtained by testing. This being so, the only way seemed to be to calculate hundreds of tests so as to eliminate so far as possible the effect of the variations in the test results. It is almost impossible to be certain, owing to these variations, that the correct value has been assigned to each of the elements present, especially considering the different effects of the elements in the presence of one another; but one comforting result of the hundreds of calculations made is that the elements seem to preserve their individual effects much more strongly than might have been supposed.

In searching for a reason why the formula that gave correct results round 0.20 per cent carbon gave results much too low at about 0.50 per cent carbon, it was thought that as the carbon would be present in the form of pearlite to which the added strength was due, the more pearlite present the greater effect the carbon would have per unit on the tenacity of the mass, and that as the manganese influenced the nature of the pearlite, its influence would increase with increasing proportions of pearlite. Another long series of calculations was then made on the ordinary results obtained day by day, supplemented by as many as possible from our records, with the result that the effect on tenacity per unit of carbon present was shown to increase with the amount present, and that the same appeared to be the case for manganese. The figures obtained were at 0.20 per cent carbon about 800 lb. per unit of carbon, rising apparently quite regularly to somewhere about 1000 lb. at 0.70 per cent carbon, although the upper figure is not so reliable as the lower owing to the very much smaller number of tests on which it has been based. The manganese in the same range seemed to vary in effect from about 100 lb. at 0.20 per cent carbon to 200 lb. at 0.70 per cent carbon. These are shown graphically in Fig. 1. Later from published and other records, the silicon used was estimated to add about 120 lb. per unit, so the formula is now

$$M.L. = 38,000 + [800 + 4 (C - 20)] C + 120 Si + [100 + (C - 20)] Mn + 1000 P.$$

M.L. represents the maximum load in pounds per square inch of original section. This formula has stood the

test of trial wonderfully well. Even with the higher silicon shell steels it has given good results.

On reading Dr. Stead's paper of September, 1916,* it was decided to extend these results and put the matter in shape for a paper to the Institute, in the hope that the formula would be tested by many of the members, criticized in detail, and that ultimately, if found defective to any marked degree a new one would be obtained that would apportion the correct effect to each element. One's own steels are apt to run in lines, and do not show the defects in a formula which might be obtained when many makers and experimenters test it on their results. To simplify the calculations Table 1 is appended giving the effect by the formula of each amount of carbon from 0.10 to 0.75 per cent., allowing extrapolation from 0.20 to 0.10, and from 0.70 to 0.75 per cent. There seems little doubt that not far above 0.75 per cent the value per unit of carbon begins to decrease. So far the formula had sufficed for our own needs, but in preparing the material for publication it was felt that it should be tested on reliable published results.

Turning first to Arnold's classical carbon series of pure crucible steels, it was found that for his steels within the range, namely, No. 1 with 0.08 per cent, No. 1½ with 0.21 per cent, No. 2 with 0.38 per cent,

Table 1—Effect of Carbon from 0.10 to 0.75 Per Cent on the Tenacity of Basic Steel, the Tenacity of Pure Iron being taken at 38,000 Lb. or 17 Tons

Carbon, Per Cent	Lb. Per Sq. In.	Tons Per Sq. In.	Carbon, Per Cent	Lb. Per Sq. In.	Tons Per Sq. In.	Carbon, Per Cent	Lb. Per Sq. In.	Tons Per Sq. In.
0.10	7,600	3.4	0.32	27,036	12.1	0.54	50,544	22.6
0.11	8,404	3.8	0.33	28,016	12.6	0.55	51,700	23.1
0.12	9,216	4.1	0.34	29,004	13.0	0.56	52,864	23.6
0.13	10,036	4.5	0.35	30,100	13.4	0.57	54,036	24.1
0.14	10,864	4.9	0.36	31,104	13.9	0.58	55,216	24.7
0.15	11,700	5.2	0.37	32,116	14.3	0.59	56,404	25.2
0.16	12,544	5.6	0.38	33,136	14.8	0.60	57,600	25.7
0.17	13,396	6.0	0.39	34,164	15.3	0.61	58,804	26.3
0.18	14,256	6.4	0.40	35,200	15.7	0.62	60,016	26.8
0.19	15,124	6.8	0.41	36,244	16.2	0.63	61,236	27.3
0.20	16,000	7.1	0.42	37,296	16.7	0.64	62,464	27.9
0.21	16,884	7.5	0.43	38,356	17.1	0.65	63,700	28.4
0.22	17,776	7.9	0.44	39,424	17.6	0.66	64,944	29.0
0.23	18,676	8.3	0.45	40,500	18.1	0.67	66,196	29.6
0.24	19,584	8.7	0.46	41,584	18.6	0.68	67,456	30.1
0.25	20,500	9.2	0.47	42,676	19.1	0.69	68,724	30.7
0.26	21,424	9.6	0.48	43,776	19.5	0.70	70,000	31.3
0.27	22,356	10.0	0.49	44,884	20.0	0.71	71,284	31.8
0.28	23,296	10.4	0.50	46,000	20.5	0.72	72,576	32.4
0.29	24,244	10.8	0.51	47,124	21.0	0.73	73,876	33.0
0.30	25,200	11.3	0.52	48,256	21.5	0.74	75,184	33.6
0.31	26,164	11.7	0.53	49,396	22.1	0.75	76,500	34.2

No. 3 with 0.59 per cent carbon, the formula gave for No. 1, 20.8 tons compared with 21.39 tons, or 47,914 lb. by test. No. 1½, 25.8 tons compared with 25.39 tons, or 56,874 lb. by test. No. 2, 33.3 tons compared with 29.94 tons, or 67,066 lb. by test. No. 3, 43.8 tons compared with 42.82 tons, or 95,917 lb. by test.

These results are in fairly close agreement, unless for No. 2. It is noted that between 1 and 1½ the carbon adds 689 lb. per unit to the tenacity; between 1½ and 2, 600 lb.; between 2 and 3, 1374 lb.; or, again, 1 to 1½, 689 lb.; 1 to 2, 638 lb.; 1 to 3, 941 lb.; or, allowing for the slight differences with other elements present, from 1 to 1½, 648 lb.; 1½ to 2, 596 lb.; 2 to 3, 1329 lb.; or 1 to 1½, 648 lb.; 1 to 2, 618 lb.; 1 to 3, 916 lb. It is interesting to note that, according to these calculations, the tenacity of pure pearlite and normalized would be almost exactly 51 tons per sq. in., as given by eliminating the calculated effect of the impurities present.

The author's results were obtained by trial and error, by calculation on each day's work, and he had not thought of comparing the results with Arnold's series during the trials. Since the attempt to get a formula on a rational basis began the same constant of 38,000 lb. or 17 tons for the iron has been used. The first formula of 800 C + 100 Mn + 1000 P served well until we began to make and test steels above about 0.40 carbon, and then it was found that results near enough

to the test results could not be obtained by the formula but were given by raising the carbon figure to 900 and the manganese figure to 150. Then above about carbon 0.60 per cent it was found necessary to raise these figures again to 1000 and 200 respectively. As no sign of an abrupt change was detected, it was then decided to take the even change from 800 C at 0.20 to 1000 C at 0.70, as already stated.

In Fig. 2 these results are plotted for comparison. The full line shows Arnold's carbon series normalized, the dotted line representing the same series with the total values for the small quantities of impurities present eliminated. The curved line shows the carbon values as obtained by a long series of trial and error calculations on ordinary commercial steels, the composition of the test-pieces used, in cases of special interest for the curve, being checked by analyses of the test-pieces.

One point to be determined is whether in the commercial steels there is a sudden change in the value of the carbon between 0.38 and 0.59—a region containing the half pearlite, half ferrite steels—or whether the effect of the carbon is represented by a smooth curve. The author's calculations so far indicate a smooth curve between 0.20 and 0.70 per cent carbon, although the method is not so apt to detect a sudden change of direction in the curve as the direct method of experiment.

In connection with any effect of phosphorus one instinctively turns to Stead's results, and taking his well-known series of three with 0.041, 0.302, 0.509 per cent phosphorus, it was found that, allowing for the effects of the other elements present, the phosphorus in the 0.041 sample was represented by 880 lb., in the 0.302 by 620 lb., and in the 0.509 by 550 lb., while in Arnold's 1.37 per cent phosphorus steel the phosphorus only added about 150 lb. per unit to the tenacity. At first sight these results do not seem to lend much countenance to the estimate of 1000 lb. per unit of phosphorus for steels containing up to 0.03 per cent phosphorus, but on plotting them as a curve they are seen distinctly to support the view and to point to the correctness of the usual estimate of the value of phosphorus, which although it has been taken in all these steels at 1000, may be 900 for those containing 0.03 to 0.06 per cent. The value of silicon has been gathered from published results, such as Baker's. For Arnold's silicon steel the formula gives 31.6 tons compared with 31.7 tons by test.

The author would like his friends, while critically examining each part of the formula, to pay particular attention to the manganese, as there most of the differences of opinion seem to be with reference to this element. As we are attempting to obtain general agreement in a series of, say, a day's work within 1 ton up to 33 tons with only an occasional member of the series beyond, and within 2 tons for higher tempers, and 0.03 per cent carbon represents over 1 ton in tenacity, it is not much use taking special notice of divergencies un-

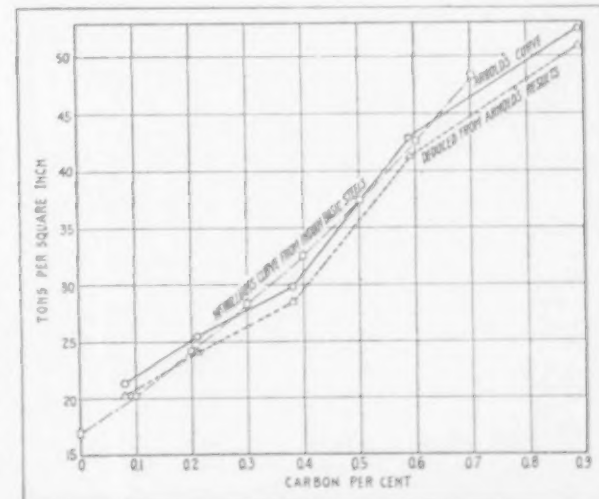


Fig. 2—Curves Showing Influence of Carbon on Tenacity of Iron

*"Influence of Some Elements on the Mechanical Properties of Steel," Journal of the Iron and Steel Institute, 1916, No. 11.

less the test-piece is analyzed, as distinct from the ladle sample. In Arnold's 1.29 per cent manganese steel the manganese adds 150 lb. per unit to the tenacity.

It is interesting to apply the formula to some of the published lists of tests, so it has been applied to Har-

Table 2—Harbord's Basic Bessemer Series

Mark	As Re- ceived	Heated to 620° C.	Means of 2 and 3	By Formula	Car- bon	Manga- nese	Phos- phorus
16	23.5	23.4	23.5	22.4	0.07	0.345	0.044
17	27.5	27.7	27.6	25.3	0.09	0.475	0.082
18	25.5	24.4	25.0	24.9	0.10	0.435	0.066
19	26.5	25.2	25.8	25.6	0.11	0.481	0.069
20	28.8	28.8	28.8	27.0	0.12	0.665	0.076
21	31.5	29.8	30.7	30.7	0.22	0.513	0.074
22	34.0	33.9	34.0	32.7	0.24	0.520	0.099
23	36.0	33.9	35.0	35.5	0.30	0.74	0.076
24	38.7	36.3	37.5	39.2	0.36	0.825	0.070
25	39.5	37.8	38.7	39.9	0.378	0.855	0.068
26	40.1	38.2	39.2	38.5	0.381	0.825	0.040
27	41.5	41.2	41.4	40.0	0.38	0.955	0.065
28	43.2	42.6	42.9	43.7	0.44	0.925	0.063
29	48.0	46.4	47.2	47.0	0.503	0.90	0.065
Means	34.6	33.5	34.1	33.8			

bord's basic Bessemer and basic open-hearth steels, as shown in Tables 2 and 3. In the mean of experimental and collected results, assuming 0.60 manganese and 0.50 phosphorus and silicon negligible, the carbon per cent recommended for 30 tons gives 30.8 by the formula; for 35 tons, 36.6; for 45 tons, 44.3; and for 50 tons, 49.6.

The agreement in the basic Bessemer series is quite good, the mean of the set by calculation being 33.8 and by test 34.1. The mean of those between 0.2 and 0.7 is

Table 3—Harbord's Basic Open-Hearth Series

Mark	As Re- ceived	Heated to 620° C.	Means of 2 and 3	By Formula	Car- bon	Manga- nese	Phos- phorus
41	24.5	24.2	24.4	25.1	0.12	0.40	0.051
42	28.5	27.4	28.0	28.7	0.20	0.51	0.052
43	26.8	25.5	26.2	29.8	0.23	0.45	0.054
44	37.8	36.3	37.1	39.2	0.35	0.853	0.077
45	34.0	32.0	33.0	36.7	0.355	0.49	0.071
46	34.4	32.1	33.3	36.9	0.36	0.90	0.018
47	35.0	33.8	34.4	37.6	0.37	0.66	0.054
48	36.3	35.2	35.8	36.7	0.368	0.625	0.040
49	37.0	35.5	36.3	39.1	0.42	0.575	0.041
50	38.6	36.3	37.5	40.7	0.43	0.61	0.058
51	42.5	40.1	41.3	41.7	0.45	0.72	0.060
52	44.0	42.6	43.3	45.2	0.502	0.68	0.064
53	51.5	49.2	50.4	51.5	0.603	0.71	0.070
Means	36.2	34.7	35.5	37.6			

still nearer, being 38.6 by calculation and 38.5 by test. The agreement in the basic open-hearth series is not so good, the means being 37.6 tons by calculation and 35.5 by test. It would not be feasible to give the many hundreds of tests on which the calculations have been made, but a few have been gathered at random and are given in Table 4.

Table 4—Indian Basic Open-Hearth Steels

No.	Section	By Test	By Formula	Car- bon	Silicon	Manga- nese	Phos- phorus
1	3/4 in. rd.	23.5	23.5	0.13	...	0.34	0.016
2	1 in. rd.	26.4	25.3	0.14	...	0.53	0.033
3	3/4 in. rd.	26.4	25.5	0.17	...	0.45	0.011
4	1 in. rd.	26.8	26.5	0.18	...	0.53	0.021
5	4 x 5/8 in. f.	27.5	28.1	0.21	...	0.69	0.005
6	10 x 5 b.	28.2	28.0	0.22	...	0.60	0.008
7	1 1/2 in. rd.	28.0	28.7	0.23	...	0.57	0.016
8	1 1/2 in. sq.	28.4	34.0	0.25	...	0.69	0.022
9	3/4 in. rd.	31.8	30.6	0.25	...	0.64	0.030
10	3/4 in. rd.	31.8	31.4	0.26	...	0.56	0.047
11	1 in. rd.	32.3	31.6	0.27	...	0.71	0.023
12	1 in. sq.	29.1	29.3	0.28	...	0.58	0.011
13	3/4 in. sq.	32.2	32.4	0.29	...	0.74	0.015
14	10 x 5 b.	34.4	34.1	0.30	...	0.74	0.042
15	3/4 in. rd.	32.9	32.5	0.31	...	0.56	0.017
16	10 x 5 b.	35.3	35.6	0.32	...	0.82	0.046
17	3/4 in. rd.	36.5	34.8	0.34	0.06	0.66	0.018
18	1 in. sq.	35.3	35.6	0.37	...	0.66	0.010
19	1 in. sq.	38.5	38.0	0.41	...	0.66	0.015
20	5 in. rd.	39.6	39.4	0.42	0.07	0.72	0.021
21	1 in. sq.	37.6	38.9	0.44	...	0.57	0.012
22	5 in. rd.	40.9	41.8	0.44	0.08	0.82	0.010
23	5 in. rd.	44.6	45.0	0.48	0.07	0.92	0.030
24	Imported basic rail	48.1	47.4	0.53	0.04	0.80	0.054
25	2 in. sq.	45.5	47.9	0.57	...	0.73	0.019
26	.....	54.5	55.2	0.66	0.15	0.75	0.046
27	1 in. oct.	52.5	53.0	0.67	0.03	0.69	0.037
28	3/4 in. rd. N 54.0	54.0	54.0	0.69	...	0.62	0.019
29	3/4 in. rd. N 54.5	54.5	54.5	0.69	...	0.62	0.019
29	7/8 in. rd. N 59.2	59.2	58.2	0.73	...	0.67	0.029
30	7/8 in. rd. 63.7	63.7	61.0	0.75	0.03	0.80	0.050
30	7/8 in. rd. N 64.6	64.6	61.0	0.75	0.03	0.80	0.050

Although the formula is intended for basic steel, it is worth applying it to acid steels to see the nature of the results. As an aid to inspection it has been helpful. Another of the causes that led to the search for a

formula was the possibility of being able to distinguish between acid and basic steels by comparison of the test results with analyses of the test-pieces, as now, with high silicon alloys, simple analysis can no longer distinguish between steels made by the two processes. The author's Sheffield friends who long for a method that

Table 5—Acid Bessemer Series of McWilliam and Barnes

Mark	As Received	Normalized	Means of 2 and 3	By Formula for Basic Steels	By 38,000 + 1000 C. + 200 Mn + 1000 P.	Carbon	Manganese	Phosphorus
a	25.9	24.8	25.4	25.5	29.1	0.10	0.56	0.06
b	35.8	34.3	35.1	33.1	37.8	0.27	0.68	0.06
c	40.9	40.8	40.9	35.3	40.8	0.29	0.22	0.06
d	39.9	39.3	39.6	35.5	39.9	0.32	0.67	0.06
e	46.6	48.1	47.4	42.3	47.3	0.44	0.36	0.06
f	52.2	52.3	52.3	46.8	50.2	0.50	0.32	0.06
g	59.0	59.4	59.2	58.9	58.9	0.70	0.36	0.06
h	64.2	65.4	64.8	62.4	61.3	0.75	0.32	0.06

will enable the purchaser to know that he is getting acid steel, and our Middlesbrough friends, who are so proud of their basic steel that they would be shocked at anyone mistaking it for acid, will be equally disappointed that in the lower and more usual tempers the differences do not seem to be sufficient to be quite characteristic.

In Table 5 the results by the formula for basic

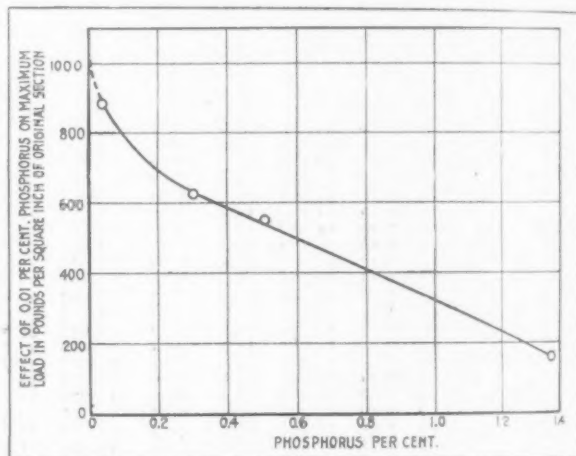


Fig. 3—Effect of 0.01 Per Cent of Phosphorus on Maximum Load in Pounds Per Square Inch as Deduced from Arnold's and Stead's Results

steels on the acid Bessemer series of McWilliam and Barnes are shown, and for comparison those by the formula $M.L. = 38,000 + 1000 C + 200 Mn + 1000 P$, which is the formula for basic steels as it stands at 0.70 per cent carbon. The tenacity of steel (a) at 0.10 per cent carbon agrees with the basic steel formula, steel (b) with 0.27 per cent carbon agrees with values for carbon and manganese of 900 and 150 lb. respectively, and the steels from 0.29 to 0.70 per cent carbon agree fairly well with the formula in column 6, while (b), the 0.75 per cent carbon steel, would require 1100 lb. per

Table 6—Harbord's Acid Open-Hearth Series

Mark	As Received	Heated to 620° C.	Means of 2 and 3	By Formula for Basic Steels	By 38,000 + 1000 C. + 200 Mn + 1000 P.	Carbon	Silica	Manganese	Phosphorus
30	25.5	25.4	25.5	25.6	...	0.132	0.03	0.400	0.055
31	26.2	26.8	26.5	26.1	...	0.128	0.03	0.53	0.058
32	30.3	30.2	30.3	29.1	...	0.183	0.04	0.71	0.052
33	33.4	33.1	33.3	34.3	...	0.311	0.04	0.575	0.028
34	37.0	35.6	36.3	37.7	...	0.370	0.06	0.80	0.041
35	43.6	41.7	42.7	41.1	...	0.436	0.04	0.71	0.047
36	49.5	43.7	46.6	41.7	44.7	0.45	0.07	0.68	0.043
37	45.8	44.1	45.0	44.0	47.1	0.50	0.05	0.672	0.047
38	50.4	47.9	49.2	49.0	50.8	0.57	0.05	0.71	0.055
39	60.8	56.4	58.6	54.7	55.2	0.66	0.05	0.79	0.058
40	55.7	52.2	54.0	54.9	54.6	0.67	0.07	0.60	0.050

unit of carbon in the formula to agree with the test result.

In Table 6 are given Harbord's acid open-hearth series. All these steels, excepting Nos. 36 and 39, are within reasonable limits of those obtained by the

formula. The only other series of acid open-hearth steels on which similar calculations have been made show similar results between those obtained by test and those by the formula for basic steels. There seems to be some real difference between the properties of even acid Bessemer and acid open-hearth steels of the same composition, as ordinarily determined, and still more between acid Bessemer and basic open-hearth steels, but not so much between acid open-hearth and basic open-hearth, the cause of which has not yet been satisfactorily explained. H. H. Campbell, whose researches on similar formulae are so well known, remarks: "The results indicate that the metalloids have different quantitative effects upon acid and basic steels. Now, if acid steel does not follow the same law as basic steel, then they are not the same, and if they are not the same, it is possible that one is better than the other, a possibility that is vigorously denied by some people."

Summary

On the publication of Dr. Stead's paper in September, 1916, the author felt that as a contribution to the attempt to determine more and more closely the influence of each of the elements on steel it would be worth preparing for publication his own results which he had obtained as a help in his ordinary work as well as for their metallurgical interest. All these formulae should have as their constant the strength of pure iron. The formula used at present for sections that would give results near to those obtained on 1-in. round bars normalized is given with a table of the effect of carbon between 0.10 and 0.75 for ease in calculation. The results of the application of the formula to certain series of steels are shown.

A bibliography on the influence of some elements on the mechanical properties of steels was given by Dr. Stead in September, 1916. The papers by McWilliam and Barnes on Heat Treatment were given, excepting the one on "A Heat Treatment Study of Bessemer Steels," to which it is well that students should refer, as it shows what can be done with first-class English acid Bessemer steels, for comparison with results on more costly material.

Rationing the British Rustless Steel Industry

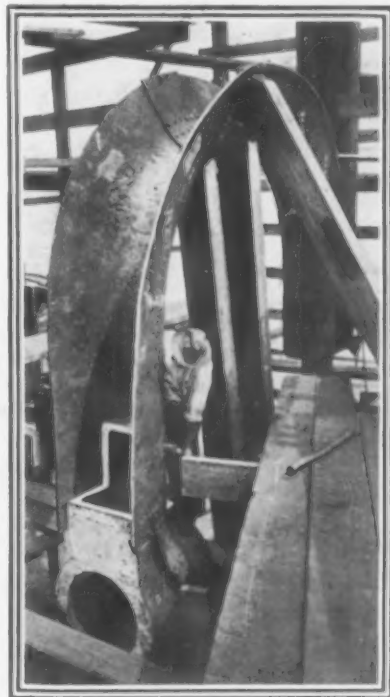
The British Ministry of Munitions has agreed, says the *London Ironmonger*, to set aside a small quantity of rustless steel for the manufacture of cutlery, and has intrusted its distribution to the rationing authority of the cutlery trade in Sheffield. The use of rustless steel in the cutlery industry was prohibited about a year ago because all chromium, an essential alloy of the material, was wanted for munitions, but since then conditions in the steel industry have changed, and as at present there is a surplus of chromium in the country, permission has been given to seven makers of rustless steel to use a certain quantity of that substance for the purpose described. That quantity will only be sufficient to clear off a small part of the heavy accumulation of overseas and home orders for rustless knives, but if the supply of chromium is maintained further allotments will doubtless be made from time to time.

Trade expansion and the further development of the inland waterways along the Atlantic Coast were among the many important subjects discussed by leading men from all parts of the country at the tenth annual convention of the Southern Commercial Congress held in Baltimore, Dec. 8 to 15. John Hays Hammond was one of the speakers on the first-named subject. At a conference of mayors from many of the coastal cities an auxiliary to the Atlantic Deeper Waterways Association was organized to further the plans to develop the inland waterways.

The Whiteley Malleable Castings Co. and the Whiteley Steel Co., Muncie, Ind., announce that every employee who went to war may have his job back and that preference will be given to soldiers for all kinds of work when they are equally as well fitted as other applicants.

Stern Posts Made of Steel Plate

One of the new developments in shipbuilding work resulting from war conditions has been the substitution of stern posts made from heavy steel plates instead of the solid casting formerly employed. This idea was conceived and carried out successfully by a shipbuilding concern in England. When the United States Shipping Board decided to put the building of ships for America on a production basis an effort was made to utilize this plan. After several attempts by steel fabricating plants and shipbuilders the Shipping Board referred the problem to the Petroleum Iron Works Co., Sharon, Pa., and after considerable experimenting the company named succeeded in doing the work satisfactorily on a production basis. Stern posts have been completed for the first 50 boats to be built by the American International Shipbuilding Corporation at Hog Island, Philadelphia.



Stern Post Shaped From 1 In. Steel Plate, 62 x 160 In.

As will be seen in the accompanying illustration, the plate had to be shaped and the difficulty in performing this operation lay in putting a proper radius in the plate and at the same time keeping uniform thickness on the edges. One-inch plates, 62 x 160 in., were used. The plate was first heated and formed on a die and then given its proper radius on a 500-ton hydraulic press. The final operation was also performed on the hydraulic press. The steel was reheated for each forming operation.

The Petroleum Iron Works Co., after having developed this plan successfully, found that a heavier press would be necessary and one of 1500-ton capacity is now being built for the work by Mackintosh, Hemp-hill & Co., Pittsburgh.

Another interesting forming operation for ship work is a bent keel plate. Former practice in shipyards had been to build a die, then heat the plate and do the forming by hand. This forming is now done on a hydraulic press at the plant of the Petroleum Iron Works Co. with a saving of both time and expense.

A decidedly unique wall calendar for 1919 has been issued by the National Safety Council, Continental and Commercial Bank Building, Chicago. It cannot fail to be most impressive in warning everybody to be careful and especially to respect danger signs. "Humanity demands safety" is the catchline of each of the twelve sheets, and this is driven home forcibly by cartoons in brilliant colors of "the world's greatest chance taker," giving the Kaiser's career in 12 scenes. Copies are supplied at 25c. each for one to 10 copies; 17c. each for 11 to 100; 15c. for 101 to 500, and 12c. each for 501 and over.

The Independent Pneumatic Tool Co., Chicago, announces the opening of a branch office and service station in Cleveland on Dec. 15, at 1103 Citizens building, under the management of Hayden F. White, who has represented the company in Detroit, Chicago and Milwaukee districts for some years past.

War Board Did Not Consider Steel Prices

Decline to Give Any Sanction to New Schedule Which Judge Gary Wished to Submit—
Much Pleasant Talk at Washington Meeting

WASHINGTON, Dec. 17.—Reduced iron and steel prices to take effect Jan. 1, prepared by a committee of the American Iron and Steel Institute, were brought to last Wednesday's session of the Price Fixing Committee of the War Industries Board, but Judge E. H. Gary, chairman of the steel committee, did not get an opportunity to read them. They were given out later by the steel representatives, and it is reported that they will be the price list of the United States Steel Corporation as well as of most of the independent producers. The Price Fixing Committee leaned over backward to avoid giving them any official sanction. Not only did it decline to permit Judge Gary to read the figures to the meeting, but later Chairman Brookings of the Price Fixing Committee gave out an official statement underscoring the fact that no prices had been fixed at the session.

The statement which Judge Gary gave to the newspaper men at the close of the session, with its schedule of prices, follows:

The Committee on Steel and Steel Products of the American Iron and Steel Institute recommend to the Price Fixing Committee of the War Industries Board that base prices on and after Jan. 1, 1919, of iron and steel products be fixed by agreement with the War Industries Board, as follows:

Commodity	Present Prices G. T.	Probable Reduction G. T.	Result- ing Prices G. T.	Per 100 Lb.
Iron ore				
Pig iron, Bessemer	\$35.20	\$3.00	\$32.20	
Pig iron, basic	33.00	3.00	30.00	
Pig iron, foundry	34.00	3.00	31.00	
Ingots, basic			37.00	
Blooms and large billets..	47.50	4.00	43.50	
Slabs	50.00	4.00	46.00	
Small billets	51.00	4.00	47.00	
Sheet bars	51.00	4.00	47.00	
Skelp, sheared	72.80	N. T. 5.00	67.20	\$3.00
Skelp, universal	70.56	N. T. 5.00	64.96	2.90
Skelp, grooved	64.96	N. T. 4.00	60.48	2.70
Wire rods	57.00		57.00	
Heavy shapes	67.20	N. T. 4.00	62.72	2.80
Plates, sheared	72.80	N. T. 5.00	67.20	3.00
Plates, universal	72.80	N. T. 5.00	67.20	3.00
Merchant bars	64.96	N. T. 4.00	60.48	2.70
	N. T.		N. T.	
Plain wire	65.00	None	65.00	3.25
Barbed wire, black				3.65
Barbed wire, galvanized.	87.00	None	87.00	4.35
Wire nails	70.00	None	70.00	3.50
Cold rolled steel		N. T. 4.00		
	G. T.		G. T.	
Black sheets, No. 28....	112.00	N. T. 6.00	105.28	4.70
Blue annealed sheets, No. 10	95.20	N. T. 6.00	88.48	3.95
Galvanized sheets	140.00	N. T. 4.00	135.52	6.05
	B. B.		B. B.	
Tin plate	7.75	B. B. 0.40	7.35	
	G. T.		G. T.	
Standard black pipe....	100.80	N. T. 6.00	94.08	4.20
Oil country goods.....	106.40	N. T. 6.00	99.68	4.45
Rails, Standard Heavy, Northern Bessemer ...			55.00	
Northern open-hearth..			57.00	
Light rails	67.20	N. T. 5.00	61.60	2.75

and that differentials between the base products mentioned and other iron and steel products be established by reference to the printed and published price book of our committee, and fixing the prices of the other materials so that they shall be in proportion to and correspond with the changes in the base prices mentioned.

Judge Gary Interrupted

The session of the steel men with the Price Fixing Committee had been announced in advance as the final

session of this kind. Every intimation that had come from the War Industries Board seemed conclusive that there would be no further price fixing after Jan. 1. Suggestions that there might be a need for official prices to fill in blanks on Government contracts based on Government prices were not enough to warrant a continuation of the committee's work. The report of the Dec. 9 meeting of the American Iron and Steel Institute with its suggestion of a schedule of reduced prices had caused much surprise in Washington. Apparently an intimation had also reached the War Industries Board that the steel men might attempt to secure an apparent Government sanction for their new schedule by having it read at the meeting of the Price Fixing Committee.

At the meeting of the committee itself prior to the session with the steel men, it had been determined that no such list should be brought up at the session.

When the steel men came into the meeting, everything started in with pleasantness. Chairman Brookings of the Price Fixing Committee made a speech praising the work that had been done by the steel industry in helping us to win the war. J. Leonard Replogle, Director of Steel Supply of the War Industries Board, seconded this tribute with considerable eloquence. Then Judge Gary replied with an address of thanks for the co-operation which the War Industries Board had given the industry throughout the war.

Thereupon Judge Gary unrolled a few sheets of manuscript and said:

"We have prepared a series of prices which we think would be fair to the industry after Jan. 1—"

"May I interrupt just a moment?" said Chairman Brookings. "We have agreed that there should be no discussion of prices of any kind at this meeting."

Judge Gary pocketed the list and the incident was over. After the session, Judge Gary met the newspaper men and gave them a copy of the price schedule, saying:

"This is the list of prices which we had decided to recommend in case the committee decided to continue the fixing of prices. They are prices which we feel would be fair to the industry."

"Were they read at the meeting?" asked one of the newspaper men.

"No," said Judge Gary with a smile, "but they were referred to."

Chairman Brookings' Statement

Chairman Brookings then gave out the following statement of the session for the Price Fixing Committee of the War Industries Board:

"As maximum prices on steel will expire on Dec. 31, the steel industry had its usual meeting with the Price Fixing Committee to-day, for the purpose of determining as to what the Government policy regarding the fixing of steel prices would be after the date named.

"At this meeting the chairman of the Price Fixing Committee called attention to the already widely published letter of resignation of the chairman of the War Industries Board, taking effect Jan. 1, and the acceptance of such resignation by the President, and that as the War Industries Board will cease to function after Jan. 1, no new price agreements will be entered into by the Price Fixing Committee, and that all former prices heretofore fixed will be allowed to expire by limitation. The chairman of the Price Fixing Committee, in closing this the last meeting of that committee with the steel

industry, expressed the Government's appreciation of the earnest, enthusiastic and patriotic service which the steel industry had rendered the Government in solving its most important and vital industrial problems so essential to the winning of the war.

"In response, Judge Gary, speaking for the steel industry, expressed its appreciation of the perfectly fair and just treatment it has always received at the hands of the Price Fixing Committee, and while their profits had been restricted, the industry has been so stabilized as to greatly reduce the difficulties of reconstruction which they now face."

The members of the committee who came with Judge Gary were the following:

J. A. Farrell, president United States Steel Corporation, vice-chairman; E. A. S. Clarke, president Lackawanna Steel Co., New York, secretary; L. E. Block, vice-president Inland Steel Co., Chicago; I. A. Burden, Burden Iron Co., Troy, N. Y.; J. A. Campbell, president

Youngstown Sheet & Tube Co., Youngstown, O.; H. G. Dalton, Pickands, Mather & Co., Cleveland; E. G. Grace, president Bethlehem Steel Corporation, Bethlehem, Pa.; A. F. Huston, president Lukens Steel Co., Coatesville, Pa.; W. L. King, vice-president Jones & Laughlin Steel Co., Pittsburgh; J. A. Topping, chairman Republic Iron & Steel Co., New York.

None of the members of the Price Fixing Committee or the War Industries Board would discuss the schedule. Neither Mr. Replogle nor Chairman Baruch of the Board saw the list itself until they got it from the newspaper men later in the day. They declined to comment upon it.

The fact that the list lowered pig iron prices started some gossip because men who claimed to be conversant with conditions in that portion of the industry insisted that the pig iron producers might resent an attempt to lower their prices under the circumstances. No one, however, would discuss the question of the other changes in the price list as given out.

O. F. S.

Refusal to Consider Prices Emphasized

WASHINGTON, Dec. 17.—The refusal of the Price Fixing Committee of the War Industries Board to have anything to do with the fixing of steel prices after Jan. 1 practically ended the Government's war connection with the iron and steel industry. The officials of the Board concurred unanimously in the decision of the committee, and the schedule of price reductions brought to Washington by Chairman Gary of the committee from the American Iron and Steel Institute must stand solely as the opinion of the industry, without color of sanction by the Government. The fact that the schedule contained a reduction in pig-iron prices caused some comment from men in touch with that branch of the industry, but the various sections of the War Industries Board have been exceedingly careful to avoid any official discussion of the subject.

Labor's Appeal for Price Fixing Ignored

The Board's refusal to fix further prices has been emphasized at every opportunity. The industries themselves have brought little pressure to secure a continuation of prices, even the action of the Institute committee being a surprise to Washington observers who thought the iron and steel industry would prefer to let market conditions fix future prices. Strangely enough, pressure has been brought by labor interests, the War Labor Policies Board having taken the stand that the continuation of a Government price-fixing policy, particularly in the metal industries, would go far toward preventing a cut in wages and a general demoralization of labor conditions at a time when the home-coming of millions of soldiers and the general demobilization of war workers threaten to swamp the labor markets. The War Industries Board, however, has not heeded these appeals.

The announcement of the War Industries Board which followed a session with the zinc producers last Saturday was of the stereotyped form, namely:

At a meeting between the Price Fixing Committee and the representatives of the industry, it was unanimously agreed that the existing maximum prices upon Grade A zinc rod plate and sheet zinc should be discontinued on and after Jan. 1, 1919, the present date set for their expiration. In making this announcement, the Price Fixing Committee wishes to express its appreciation of the hearty co-operation of the industry in assisting the Government to carry out its war program.

The representatives of the copper industry will meet with the Price Fixing Committee and with the War Industries Board on Friday, when, it is expected, the same decision will be made public concerning copper prices.

Great Britain Pursuing Opposite Policy

In the face of this policy by the Government authorities here, it is interesting to note that Great

Britain is pursuing the opposite course. The Department of Commerce has made public a cablegram received from Consul General Skinner at London, in which he reports:

The Minister of Munitions announces he is fixing export prices of pig iron applicable to all exports while existing maximum prices for home delivery remain in force. New maximum prices are also being fixed for steel for delivery in the United Kingdom from Feb. 1. The Minister states that while the government was practically the sole purchaser of iron and steel products prices were stabilized by paying direct to makers a subsidy representing the increased costs due to war conditions. Since the government no longer is the sole purchaser, it is desirable to place the industry on an economic basis, but as the immediate withdrawal of all subsidies would seriously prejudice the resumption of ordinary commercial work the government has decided to remove the subsidies in two stages. Subsidies applicable to steel making will be removed Jan. 31; those applicable to pig iron will continue to April 30. It is not intended that government subsidies should be used to enable exports to be made to overseas markets at less than full cost, and therefore the government will levy as drawback on exported iron and steel the difference between the home and export prices.

This announcement of the British policy is doubly interesting at this time because of the continually increasing importance of our own foreign trade in iron and steel. From a Governmental standpoint, little real progress has been made to determine just what American industry may expect from foreign markets. The War Trade Board has lifted a long series of embargoes and is trying to help our foreign commerce. The War Department has released a considerable amount of tonnage which is now available for export service, although the exact allocations as to trade routes have not been completed.

Foreign Trade Questions

The real question of our participation in the foreign markets for steel is, of course, up to the industry itself. No word has been received here of the final organization of the Independent Steel Products Co., through which the independent steel makers are planning to make use of the Webb law privileges as far as they apply to their lines. It is reported here, however, that the presidency of this organization has been offered to E. A. S. Clarke, president Lackawanna Steel Co.

J. Leonard Replogle, the Director of Steel Supply, and Bernard M. Baruch, chairman of the War Industries Board, have been asked by President Wilson to hold themselves in readiness to go to Europe to study the industrial problems there as far as they relate to peace. It is expected that they will leave sometime next month to participate in conferences which are to determine just what part we will play in the rebuilding of Belgium and northern France, as well as

our general contribution toward restoring European industry.

One very vital feature in this problem is the point to which we are to be willing to let Europe have pig iron. The requests which are already in sight from Italy and France for this commodity represent some large tonnages. Naturally the United States prefers to export finished materials. On the other hand, it is expected that the European countries would object to being compelled to buy only completely finished products from us, while their own labor is idle because of lack of raw materials. Messrs. Replogle and Baruch are expected to get to the bottom of the facts that concern this situation and to work out a program which will keep our own industry as busy as possible while at the same time aiding European industries in getting on their feet.

Many of these industries will be in the market for machinery, but even that can only come with the rebuilding of destroyed plants and when enough raw materials are in sight to make the resumption of real activity possible. Even the labor problem may be a difficulty in some of these devastated portions because the labor that was indigenous before the war has been scattered, and the destruction of villages and cities has ended thousands of industrial entities which must be slowly gathered again.

Chairman Baruch himself declined to do much commenting on the general situation. He did not even know when he and Mr. Replogle would be likely to sail. They are awaiting the President's orders. As far as the co-operation of a commission of American business men with the Governmental authorities on the other side is concerned, Mr. Baruch inclined to the view that this ought to wait until the Versailles conference has brought us a little nearer actual peace, and a survey of the whole industrial situation is possible.

Demobilization of War Industries Board

The demobilization of the War Industries Board is still going on. L. W. Williams, the assistant director of the Pig Iron Section, has returned to his post as vice-president of Park & Williams, Philadelphia. Jay C. McLaughlan, the director of the section, is still in Washington, working on his final report. The Resources and Conversion section of the Board has been turned over to the Department of Commerce, but its activities will be continued only temporarily. The Conservation Division has gone to the same department, and its activities are to be permanently continued. It was originally known as the Commercial Economy Board, and its function has been "the studious conservation of resources and facilities by scientific commercial and industrial economies." "The material gathered and the staff developed will enable the Department of Commerce," says a statement prepared by the latter, "to carry on the work of eliminating waste and promoting precision in business which it has long had in mind."

O. F. S.

Booth-Hall Electric Furnaces

The Booth-Hall Co., manufacturer of electric furnaces, 2309-2315 Archer Avenue, Chicago, in the past few months has placed in operation the following steel-melting furnaces:

One 3-ton furnace, basic, West Michigan Steel Foundry Co., Muskegon, Mich., making castings for naval gun carriages.

One 1½-ton furnace, acid, Monroe Steel Castings Co., Monroe, Mich., producing steel castings.

One ¾-ton furnace, basic, Queen City Foundry Co., Denver, Col., making steel castings for the Emergency Fleet Corporation.

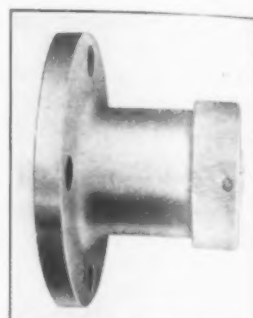
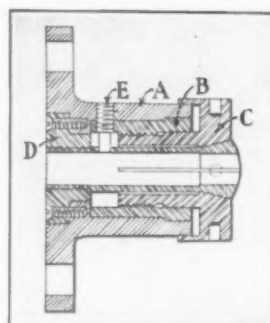
One 1½-ton furnace, acid, New England Steel Castings Co., East Longmeadow, Mass., for steel castings.

In addition to these furnaces there are also a ¾-ton acid-lined furnace in operation at the plant of the Duriron Castings Co., Dayton, Ohio, used for experimental work in the manufacture of Duriron, and a 1½-ton furnace at the Avery Co.'s plant, Peoria, Ill., operated basic, for the manufacture of tractor castings.

Bemis Lathe Chuck

This collet chuck is manufactured by the E. W. Bemis Machine Co., Worcester, Mass. Primarily a lathe chuck, it is useful in range of diameters handled and in quickness and accuracy of operation with all types of metal-turning machinery.

A distinctive feature of the Bemis chuck is in operating the collet jaws to center and to grasp the work. The jaws do not have any longitudinal movement when



The Collet Jaws of this Chuck Do Not Have Any Longitudinal Movement

the stock is of varying diameter. The jaws are held securely in the chuck body and do not advance or back away from the cutting tool. A member riding upon the taper of the jaws opens or closes them. As a consequence, it is claimed, uniformity of length of work is assured, an advantage in cutting off stock.

The chuck has a body A, reinforced by the threaded sleeve B, to receive the closing member C. The latter is knurled for hand operation and also has holes to take a spanner wrench. The collet jaws, interchangeable for varying sizes of work, screw into the steel nut D, and are held firmly by the headless screw E.

The chuck is made in two styles, one flanged for bolting to a face plate and the other threaded to screw into the nose of the spindle. There are two sizes, the smaller taking collets from 1/32 to ½ in., the larger from 1/16 to 1 in.

Brass Manufacturers' Annual Meeting

The annual meeting of the National Association of Brass Manufacturers was held at the Hotel Astor, New York City, Dec. 11 and 12. Harry E. Speakman, Adolph Mueller and C. C. Hale were appointed to meet with delegates of other organizations for a general conference to work out problems for a standardization of the brass products of the United States in accordance with the recommendations of the U. S. Bureau of Standards.

The following officers were elected for the ensuing year: President, Harry E. Speakman of Speakman Co., Wilmington; first vice-president, H. N. Gillette, Standard Sanitary Mfg. Co., Pittsburgh; second vice-president, Raymond Deutsch, Monarch Brass Co., Cleveland; trustees, J. C. Sanders, American Foundry & Mfg. Co., St. Louis; M. J. Koblit, J. A. Cochran Brass Mfg. Co., Cleveland; Wilson Carey, McShane Bell Foundry Co., Baltimore; Adolph Mueller, H. Mueller Mfg. Co., Decatur, Ill.; R. H. Smith, E. Stebbins Mfg. Co., Springfield, and L. A. Cornelius, Wolverine Brass Works, Grand Rapids.

The following were elected delegates to the National Conference of the Federation Supply Association: From the West—J. L. McDonald, Dubuque, and W. H. Wasweyler, Milwaukee; from the East—A. L. Hills, Haydenville, and C. C. Hale, New Haven.

Organizers of the American Federation of Labor engaged at Youngstown, Ohio, in an attempt to unionize the steel-mill workers have met with disappointing results. About 500 out of a possible 55,000 have joined. Special appeals to day laborers have signally failed for the reason that they are largely foreigners and transients. The foreigners are well satisfied with the treatment accorded them by employers and many are also planning to return to Europe.

Machine Tool and Army Men Confer To Control Release of Accumulated Government Tools

Manufacturers Consider Proposal to Dispose of a Government-Owned Tool for Each New One Sold—Four Years for Unloading \$300,000,000 Worth of Munition Machines

THE first steps in the development of a program for disposing of the great quantities of machine tools now under construction for or owned by the Government in munition plants were taken at the annual convention of the National Machine Tool Builders' Association at the Hotel Astor, New York, Dec. 10-11. The vital importance of a plan of co-operation for effecting such a readjustment was forcibly presented to the convention by Major General C. C. Jamieson, chairman of the Committee on Salvage of the War Department, who addressed the session Tuesday afternoon, Dec. 10. In harmony with his suggestions, the details for carrying out the plan are to be worked out by a special committee of three members of the association in co-operation with officials of the War Department, these conferences having been scheduled to begin in a few days at Washington. The whole scheme of readjustment is based on the plan for machine-tool builders to resell one Government-owned tool for each new one of the same model and size sold from the builder's current output. This principle received general approval from those present at the convention.

It was estimated by Government officials that approximately \$300,000,000 worth of machine tools are now either under order, in process of manufacture, or already installed in the shops of war contractors working under the auspices of the Government. Two-thirds, or about \$200,000,000 worth, are classified as standard tools, many brand new, and the others used on War Department contracts for the most part less than a year, except a small percentage previously engaged on munition work for the British Government. Many of these used machines are reported to be in prime condition.

This immense reservoir of equipment was estimated equal to two years' output of the machine tool builders of the country at the present normal scale of production, the annual total being placed at about \$50,000,000 in 1914 values, and \$100,000,000 to-day. It was stated that a plan to dispose of this great accumulation had been arrived at by the Committee on Salvage of the War Department, and had already received the sanction of the Secretary of War. It was not explained in detail, but it was brought out that the committee is vested with power as to the

disposition of the entire tool surplus in the market.

The situation as it stands to-day was laid before a joint session of the members of the National Machine Tool Builders' Association and the National Supply and Machinery Dealers' Association, Tuesday afternoon, Dec. 10, at which the War Department's position was explained by General Jamieson. On behalf of the Government it was conceded that the machine-tool builders, having spared no effort to increase the supply of machines in keeping with the great national war effort, are morally and economically

entitled to protection from the threat that unrestricted dumping of this equipment would inevitably cause.

The convention cordially adopted a program of close co-operation with the Government, and, as stated in the resolution given elsewhere, declared for a rational readjustment of canceled contracts in keeping with the recent statement of Secretary of War Baker that such procedure should safeguard all public and private interests concerned.

The sentiment as expressed at some sectional meetings Wednesday forenoon, Dec. 11, was that the Government might bill its stocks back to the manufacturer at 20 per cent off list, the tools in turn to be sold to dealers at 12½ per cent off list. This, it

was thought, would prevent flooding the market. It is understood that cancellations are to be adjusted by district claims boards, and that the foregoing scheme is operative where the award provides that the Government shall purchase the machines.

The idea prevailed that the Government should allow the builders to finish up all tools 50 per cent completed. Another suggestion was offered that it might be well to have the Government take incomplete machines and parts at cost plus normal profit, the Government then to sell them for scrap or else that the manufacturer allow the Government salvage value, he in turn to dispose of them.

As a necessary preliminary to the operation of the general plan would come a survey of this surplus machinery stock, from which itemized reports would be compiled for each tool builder, as a guide in carrying out the resale program.

Experts suggested that a part of the \$100,000,000 worth of special machines, such as large gun-boring lathes, etc., may be converted to peace uses by such

A Sane Cancellation Policy Indorsed by Tool Builders

WHEREAS, It is in the public interest that all war orders placed by any contracting agency of the Government, and accepted in good faith, whether formally and regularly executed or not, should upon cancellation by such contracting agency be promptly and equitably adjusted and resultant claims paid, be it

RESOLVED, That the National Machine Tool Builders' Association, in convention assembled, request that in accord with the principle already laid down by the Secretary of War, all cancellations and adjustments be carried out in a manner that will cause the least dislocation of industry, having in view the largest interests of the Government, the employers and employees, allowing industry to return to its normal condition as quickly as possible; and that our members interest themselves actively to have the matter placed strongly before the department concerned and their members of Congress.



ALBERT E. NEWTON

President of the National
Machine Tool Builders'
Association

such contracts is legally termed an assumption, or an obligation not under seal, and it might accordingly require an action at common law for its enforcement. Government representatives present admitted that as such it was undoubtedly morally and legally binding on the Government, and would presumably be so honored before the Court of Claims; but it is anticipated that legislation will be framed to clear up the situation and authorize the carrying out of these arrangements according to the plan contemplated for their readjustment.

The question as to the method to govern the appraisal of second-hand Government machine tools did not receive such general consideration, and these details were left to the conferees. It is understood that the Navy Department plans to take all of this

methods as cutting down the bed and mounting a different type of head.

Nearly \$1,000,000,000 is reported to be the estimate at Washington of funds advanced by banks and private capital on construction work and plants for carrying out rush orders in the hurried efforts to keep pace with General Pershing's requirements. Part of this work has been done under the standard official written contract, but much of it was arranged entirely by correspondence and telegraphic order to go ahead under some specific contract number. The basis of

equipment it requires to replace worn-out, inadequate or out-of-date tools, and so modernize all the Navy Yard shops.

It is not improbable that the Peace Conference at Paris in its program for the industrial rehabilitation of Belgium will assign a certain area to the United States. Should such a plan be approved, it is conceded that no small part of our \$300,000,000 surplus of machine tools could be absorbed in repairing the complete wreckage of Belgian factories.

At the concluding session of the convention, Wednesday afternoon, Dec. 11, the following were elected officers of the association for the ensuing year:

President: Albert E. Newton, vice-president and general manager Reed-Prentice Co., Worcester, Mass.

First Vice-President: Aug. H. Tuechter, president Cincinnati Bickford Tool Co., Oakley, Cinn.

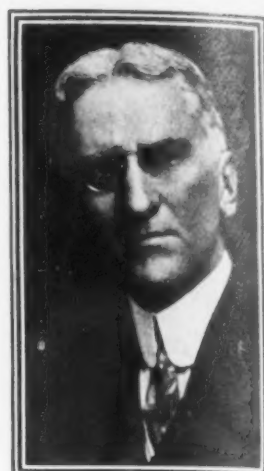
Second Vice-President: E. J. Kearney, secretary and treasurer Kearney & Trecker Co., Milwaukee.

Secretary: C. Wood Walter, vice-president and secretary Cincinnati Milling Machine Co., Cincinnati.

Treasurer: Winslow Blanchard, president Blanchard Machine Co., Cambridge, Mass.

General Manager: Charles E. Hildreth, president Whitecomb-Blaisdell Machine Tool Co., Worcester, Mass. (Re-elected.)

Additional Member of the Council: J. B. Doan, president American Tool Works Co., Cincinnati.



CHARLES E. HILDRETH

General Manager National
Machine Tool Builders' Association

Domestic and Export Aspects of Trade

A letter was read by President Doan from the War Trade Board, stating that the only prohibition in connection with the granting of export licenses is on certain large tools needed in the United States; that at present all machine tools have been removed from the restricted list, and that all applications for licenses are now issued freely except to some countries contiguous to enemy countries. The War Trade Board placed itself on record as desiring to encourage American manufacturers to ship machinery abroad, and is working to remove restrictions. It advised that manufacturers should file applications for export to all destinations except Canada and Newfoundland.

The opening session was given over to the consideration of the problems facing machine-tool builders, as seen from the standpoint of the industrial bank expert, the exporter of machinery, and the commercial accountant.

President Doan, in introducing F. C. Schwedtmann, vice-president National City Bank, New York, characterized the present as a reconstruction period. He acknowledged the seriousness of the many problems confronting manufacturers, but believed that with intelligent co-operation success would continue to follow industry. Mr. Schwedtmann spoke in part as follows:

Financial Business Conditions

BY F. C. SCHWEDTMANN

THERE is no day when there was greater need for co-operation between Government, industry and banking than at the present time, especially for foreign trade. The question of foreign trade ought to be very close to the hearts of machine tool manufacturers.

Excellence of product is something that is of greater importance than we may realize. It is not only necessary to have the very best of tool machines, but it is also necessary to educate our youth and especially not only those coming directly in contact with machine tools, but engineers, constructors, the designers, and even the bankers, with the value of machine tools.

There is not anything fundamentally wrong with our industrial situation at the present time. We have been praised all the world over for ingenuity, for adapting ourselves to the conditions that confront us. If we do that to-day, there is but very little to fear.

If we only can get the good employers and the good workers on one side of the fence, and the good bankers too, for that matter, and get the bad ones on the other side, we need not be afraid of Bolshevism in this country.

The present needs closest co-operation and a special program. You need to get close to the Government officials. You must see to it that the contracts are not canceled too quickly. Remember that machine tools can be used for other purposes than making shells. Would not this be the very time when we could co-operate with the Government to work out some special program? See the water powers of this country which could be developed, and the development means tool machines. A national program such as the electrifying of all our power or the greater part of it would help wonderfully in getting over the present situation. Every real citizen in the United States, I am sure, would be glad to pay his tax as a means of getting the present situation straightened out, getting less people thrown out of work and keeping all our manufacturing establishments busy.



AUG. H. TUECHTER
First Vice-President National Machine Tool Builders' Association

one carefully worked out program which covers all the elements of a nation that ought to be interested in a national program. I want to lay especial emphasis upon foreign trade; and I want to lay further emphasis upon the fact that in many cases we will have to provide long-term payments, because many of the countries have not the money to pay promptly. We have lent liberally to foreign countries. We will have to continue to do it. We will have to be prepared when those loans come due to extend them. We will possibly have to be prepared to accept additional securities for the interest on those loans, and we can undoubtedly also do that.

Now, you do not want to have a weak link in your chain. You want to be absolutely certain that you have the right sort of an agency for your tools. It is the link in the chain between yourself and the final consumer, the user of the tool machine that is now. You need to have the best sort of agent. You need to have the best sort of a banker. You need to have the best sort of a manufacturer, and you need even to

We need no Government control to do those things. We need no control by the financiers. You, gentlemen, are the manufacturers, the industries of the country, and the ones that can initiate those things; but the Government ought to help you. The bankers will help you. I am quite sure there is no reason in the world to be afraid of the financial situation, providing we do not forget that at the present time, the same as at all times, the amount that we have to spend depends upon the thrift of our people.

The thrift campaign is not over because we need less money for war purposes. We need all the money we can get, in order to have the nation work on

educate the machinists and the youngster in the use of your tools.

We are in a better condition in the United States than any other country in the world. We have all the markets that we had before the war, and all that we have furnished during the war extra is simply that much gain. If we now adapt ourselves immediately to present conditions, we are going to get through the present-time situation just the same as we have gotten through the past situation.

The next address, by James W. Hook, president Allied Machinery Co. of America, New York, reviewed "The Export Future of Machine Tools." This admirable and exhaustive paper is given nearly in full elsewhere in this issue.

President J. B. Doan, in his appreciation of this address, emphasized the fact that: "We are going to



C. WOOD WALTER
Secretary of the National Machine Tool Builders' Association

need foreign business, and I hope that we, in the future, will not think in terms of a comparatively few countries in Europe, but that we will think of foreign trade as absolutely world trade, and that we will make a serious attempt to go after the machine tool trade of the entire world."

He then introduced the subject of taxation, which, particularly in relation to corporation finances, was a matter of serious consideration by the convention.

Existing and proposed tax legislation was analyzed and compared by the next speaker, E. R. Webster, member of Price, Waterhouse & Co., accountants, 54 William Street, New York, who explained that there are at present three Federal taxes: (1) undistributed profits, (2) capital stock, and (3) that on income and war excess profits. The first two are relatively unimportant.

The war excess profits tax

The Convention's Attitude on Taxation and Inventories

RESOLVED, That the National Machine Tool Builders' Association, in convention assembled, hereby indorses the following resolution enacted unanimously by the conference of war service committees at Atlantic City, held under the auspices of the Chamber of Commerce of the United States:

(1) TAXATION

"The cessation of hostilities brings to business interests a feeling of deep concern in the matter of taxation. The problems of readjustment are made more difficult through inequalities in the present law.

"We believe, therefore, that in the consideration of amendments to the present act, or the passage of new revenue legislation the views expressed by organizations of commerce and industry, ability to pay inventory values, and proper reserves, together with careful survey of the amount of revenue required under the new conditions are matters of vital importance to business interests of the nation during this readjustment period.

(2) INVENTORIES

"We urge that Congress should give careful consideration to the grave menace now facing all industry, due to the fact that both raw materials and finished goods are carried in full measure to meet the extraordinary requirements of the Government and of the people, and that in large part the stocks have been acquired at abnormal cost and are therefore carried into inventories at inflated values, thereby showing apparent profits which have not been realized, and which probably will never be fully realized. These are largely book-keeping or paper profits, and should not be used as a basis for taxation.

"We therefore recommend that any tax law shall provide that during present conditions the taxpayer shall be allowed to make a deduction from his apparent profit by way of a reserve for a subsequent shrinkage in the value of merchandise.

"We believe that the interests of the Government can be protected against abuse of this privilege by the fixing of a maximum percentage of deduction to be allowed, and by the use of proper methods of inspection and appraisal."



WINSLOW BLANCHARD
Treasurer of the National
Machine Tool Build-
ers' Association

was imposed by the act of Oct. 3, 1917, and applied to the profits of the year 1917. For practical purposes it may be described as a graduated tax on the profits in excess of from 7 per cent to 9 per cent of the invested capital. It was generally recognized that the law was rushed through at the last moment, without proper consideration and, while the regulations which were prepared with the help of the Advisory Committee appointed by the Secretary of the Treasury did their best to make the act workable, they were naturally unable to adjust all of its inequalities.

The new bill at present before the Senate reported out on Friday last, contains provisions for excess profits tax and also war profits tax. The provisions in the new bill for the relief of the taxpayer in special cases should also make the new law more acceptable.

I will now refer briefly to the principal changes which affect the manufacturer:

The Provision for Amortization of War Plants

Under the 1917 act nothing more than ordinary depreciation was allowed as a deduction. Under the new act there is allowed by law as a deduction:

"In the case of buildings, machinery, equipment, or other facilities, constructed, erected, installed or acquired, on or after April 6, 1917, for the production of articles contributing to the prosecution of the present war . . . there shall be allowed a reasonable deduction for the amortization of such part of the cost of such facilities . . . as has been borne by the taxpayer, but not again including any amount otherwise allowed under this title or previous acts of Congress as a deduction in computing net income. At any time within three years after the termination of the present war the commissioner may, and at the request of the taxpayers shall, re-examine the return, and if he then finds as a result of an appraisal or from other evidence that the deduction originally allowed was incorrect, the taxes imposed by this title and by Title III for the year or years affected shall be redetermined; and the amount of tax due upon such redetermination, if any, shall be paid upon such redetermination, if any, shall be paid upon notice and demand by the collector; or the amount of tax overpaid, if any, shall be credited or refunded to the taxpayer in accordance with the provisions of Section 252."

In view of the armistice, and the completion or cancellation of many large war contracts, this deduction is of the greatest importance and seems to be most necessary and fair.

The Offsetting of Losses Against Profits

Under the new bill, it is provided that if a net loss is suffered by the taxpayer in any year beginning after Jan. 1, 1919, then the loss may be deducted from the net income for the preceding taxable year. There is also a provision that if there were net losses during 1917 or 1918 they could be deducted in computing the income for 1919. Under the English law, corporations were taxed on the average of three years, and one weakness of our previous laws has been that no offset was allowed when a company incurred a loss; this provision should go a long way to meet this objection, and should prove a considerable benefit to businesses whose profits are subject to wide fluctuations.

Inventories

Under the 1917 act inventories had to be valued at cost or market, whichever was lower.

The clause in the new bill regarding inventories is as follows:

"(13). If it is shown to the satisfaction of the commissioner that during the taxable year 1919 or 1920, the taxpayer (a) has for the first time ascertained the amount of a loss sustained during the preceding taxable year and not deducted from the gross income therefore, or (b) has sustained a substantial loss (whether or not actually realized by sale or other disposition), resulting from any material reduction (not due to temporary fluctuations) of the value of the inventory for the preceding taxable year, then the amount of such loss shall be deducted from the net income for such preceding taxable year, and the taxes imposed by this title and by Title III for such year shall be redetermined accordingly. Any amount found to be due the taxpayer upon the basis of such redetermination shall be credited or refunded to the taxpayer in accordance with the provisions of Section 252."

While this would not seem to permit of inventories being taken for tax purposes at less than cost or market at the end of the taxable year, it does provide relief in the event of a fall in prices before the inventory is liquidated and in probably quite a number of lines this provision will prove of great benefit.

Convention Brought Encouragement to Western Trade

CHICAGO, Dec. 16.—Many machine tool builders and their representatives who went to New York in a decidedly pessimistic frame of mind came away from the meeting of the National Machine Tool Builders' Association feeling much relieved. From persons who were in attendance it is learned that they were impressed by the desire which War Department officers showed to find a way out of the present tangled state of the industry. At the same time it is admitted that the proposal most favorably regarded cannot be effectuated without the consent of the higher officials of the War Department, and possibly not then unless legislation is had. It would mean that the department would work in conjunction with the machine tool industry over a period of perhaps four or five years.

But the interchange of views and the friendly attitude of Government representatives made everyone hopeful. How serious a situation confronts the industry is evident from that fact that the Government has on hand or under contract machine tools of more or less standard types valued at around \$200,000,000. At first it was intended to include in the aggregate of machines for which the Government may be said to be responsible, those 75 per cent finished, but it was finally agreed to drop to 50 per cent finished. From this point, the machines involved include those in various stages of manufacture to completion, others on which shipment has been held up, tools in Government plants and some which have been delivered, but never removed from their crates. There is doubt in the minds of some as to machines in the hands of private shell or munitions plants being included, but the bulk of opinion is in the affirmative.

As gathered from persons who were at the meeting, the plan is for the Government to spread its disposal of something like \$200,000,000 worth of machine tools over a period of years. This would be done by the War Department becoming a friendly competitor with the machine tool industry in a fifty-fifty proposition. If inquiries came along for a certain type of machine



E. J. KEARNEY
Second Vice-President Na-
tional Machine Tool
Builders' Association

held by the Government, the latter would care for half of the demand and the builder for the other half, either from stock or by building the machines required for his part of the business.

There was no one at the meeting with authority to say this plan shall prevail; in fact, the general view was that legislation might be needed to authorize such an arrangement. It would mean expenditures and considerable work on the part of the War Department, but

the attitude shown by the department's officers at the convention was one of helpfulness and of favorable regard for the proposed arrangement. A committee of the tool builders is at work.

It was the consensus of opinion at the meeting that prices probably would not be reduced, at least until June, because of the high cost material which must be used for some time to come, while labor is still on a war-time basis.

Supply Meeting Indorses Resale Control

Committee Appointed to Meet with Machine
Tool Builders and General Jamieson —
War Work at Washington Commended

THE eighth annual meeting of the Machinery Section of the National Supply and Machinery Dealers' Association, held at the Hotel Astor, New York, Tuesday and Wednesday, Dec. 10 and 11, was unusually well attended, over 60 machinery dealers being present. The chairman of the Machinery Section, Anton Vonnegut of the Vonnegut Machinery Co., Indianapolis, was introduced by the president of the association, J. D. Nicklis of Manning, Maxwell & Moore, Inc., New York, and Mr. Vonnegut took active charge of the meeting.

Recognition of Government Machine Tool Section

The association placed itself on record as heartily approving and indorsing the work of George Merryweather, chief of the Machine Tool Section of the War Industries Board. It was declared that he had rendered excellent and meritorious service for the dealers in machinery through giving information to the War Industries Board as to the functions of legitimate dealers in machinery and in numerous ways, for the better service of the Government and of the industry.

The dealers present were much interested in plans for the protection of their business against losses arising out of cancellation of machine tool orders.

Reference was made to the report of the secretary-treasurer, in which he indicated that the War Industries Board suggested that the dealers take no action in cancellation other than that which was supported in turn by the manufacturers.

It was made clear that the Government did not desire contractors or sub-contractors or suppliers of material to be under unnecessary losses in connection with cancellation, and that arrangements were being quickly perfected to provide for the fair handling of these matters.

Dealers' Valuable Service Cited

The members present indicated the extent to which they had been of service to the Government as dealers. Facts being presented to show that the most economical handling of machine tools is accomplished through the dealer. It was pointed out that while one or two manufacturers may make temporarily satisfactory headway through the sale of machine tools direct to the user, an experience over a period of years with several normal years and one or two poor ones would convince the machine tool builder endeavoring to establish distribution without the assistance of the dealer that his selling expense would jump to 20, 25 or 30 per cent.

In the morning meeting on Tuesday, preparation was made for the afternoon conference with General C. C. Jamieson and staff relative to the disposition of the large lot of machine tools accumulated by the Government and on hand at the cessation of hostilities. Pleasure was expressed at this evidence of the active co-operation of the Government with the dealers and manufacturers.

Committee on Resale Control

A committee to confer with General Jamieson and with a similar committee from the National Machine

Tool Builders' Association was appointed, consisting of Herbert W. Strong of Strong, Carlisle & Hammond Co., Cleveland, chairman; M. A. Sherritt, Sherritt & Stoer Co., Philadelphia, and Anton Vonnegut, Vonnegut Machinery Co., Indianapolis. At the Wednesday morning session the dealers discussed the report of this committee. It was informally stated that there were indications that the return of this machinery to users would be along orderly lines, which would serve to avoid disruption to the business of the dealer and builder. The Government official expressed a thorough desire to co-operate so that neither the industry nor the labor involved would be unduly interfered with.

It was thought that a certain volume of the machinery involved would be absorbed in some of the Government plants or private plants in which it was located.

Government Attitude on Contract Adjustment

A representative of the Claims Board from Washington stated that it was intended that claims should be adjusted early, and with a full recognition of the facts that there were certain expenses on the part of the dealer which should be defrayed, as well as the expenses on the part of the builder.

The members present referred to the great value of such a conference between dealers, machine tool builders and Government officials at this time, pointing out that the benefits arising out of the work of the machinery section is of a definite and positive character, in addition to the exchange of information and the personal contact of dealers attending the meeting.

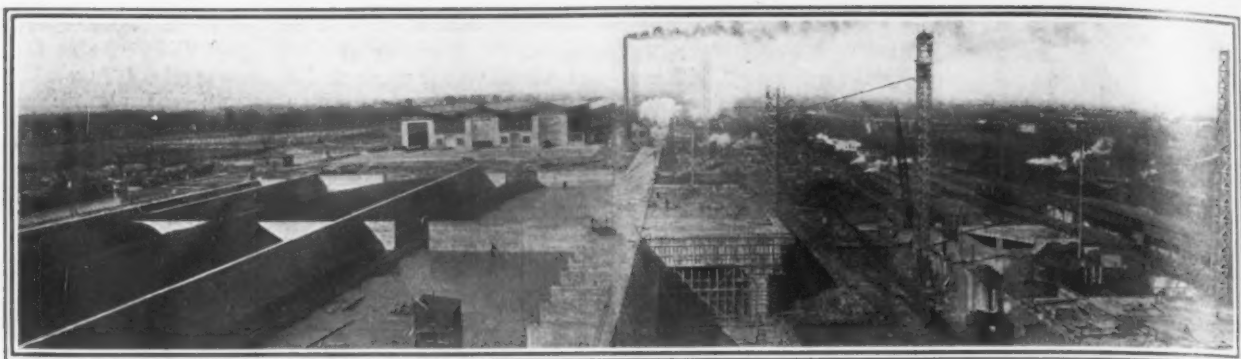
The membership of the association has increased from 139 at the convention last May to 216 at the present time.

Manganese Ore Imports in First Half

The imports of manganese ore from all sources from January to June, 1918, as reported by the Bureau of Foreign and Domestic Commerce, were 244,836 gross tons, which, if added to the 136,554 tons of domestic ore produced, indicate a visible supply of 380,000 tons for the half of the year. Brazil supplied 171,895 tons, Cuba, 41,984 tons, India, 22,150 tons, and small quantities were imported from Chile, Costa Rica, United Kingdom, Panama, Mexico, Japan, Canada and Australia. The imports in July were 29,886 tons, and those in August were 33,975 tons.

From January to June, inclusive, 18,474 tons of ferromanganese was received from Europe. In June the imports for the remainder of the year were restricted to 12,000 tons.

The Union Iron Works, Los Angeles, Cal., has discontinued its office in the Stimson Building, comprising contracting and engineering departments, effective Dec. 1., removing this branch of its business to the main manufacturing works at 5125 Santa Fe Avenue. The company specializes in the production of structural steel and general iron work.



Progress Being Made on Ford Plant

Large Number of Men Transferred from Eagle Shipbuilding Works to Hasten Construction of Blast Furnaces—Other Building to Be Started

DETROIT, Dec. 16.—Construction work on the Ford Motor Co.'s blast furnace and coke oven project on the westerly outskirts of this city is assuming tangible form. The first of the two units of the blast furnace plant is nearing completion and foundations are in for the second. The three stacks of No. 1 unit are up.

Nearby the two coke blocks are almost in readiness for operation. They are 1400 ft. long and separated by a huge coal bin. Two Hulett unloaders have been in operation for several weeks, taking construction materials and coal from lake boats which have been brought up the half-mile canal connecting with River Rouge.

The first completed building to be erected and placed in operation is the brick, concrete and steel blast furnace repair shop covering an area 75 x 530 ft. In this building all construction machinery is being put up.

Concrete work on the huge ore and coal bins, extending along the whole length of the canal, is two-thirds finished, with the remainder being rushed to completion before cold weather sets in. Across these bins are two conveyor bridges 110 ft. high with a span of 350 ft. One of these is in operation.

Henry Ford declares the coke plants will be in full operation by spring. No date has as yet been fixed

for the blowing in of the blast furnaces. Work on the open-hearth furnaces is now being pushed forward. Practically all construction is being laid out with a view of 100 per cent expansion when necessary.

Throughout the war period work on the blast furnaces has been slowed down, with an average of 1500 men employed. With the signing of the armistice additional labor was brought from the Ford Eagle shipbuilding plant and 3500 are now engaged on the blast furnace construction.

There remains a huge amount of work to be done on the site, including the construction of the foundry, 264 x 968 ft., immediately adjoining the blast furnaces, which will connect with a machine shop of the same length and 198 ft. wide, and another building housing the cleaning, pattern and core rooms, 88 x 968 ft.

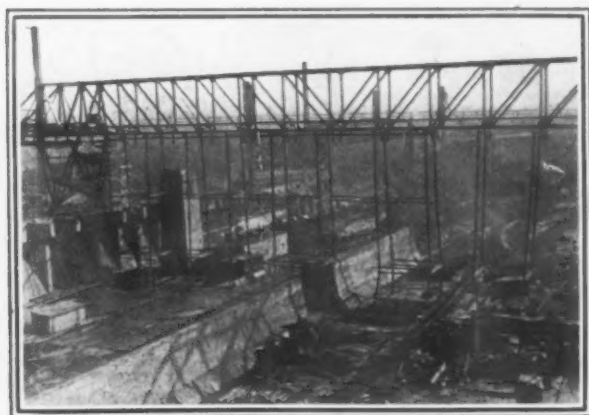
Other work yet to be started will include a mile-long water intake and tail race 13 ft. in diameter, which will supply the plant with drinking, mill and quench water.

All buildings will center around the administration building and laboratory, which will front on a park-like entrance to the grounds.

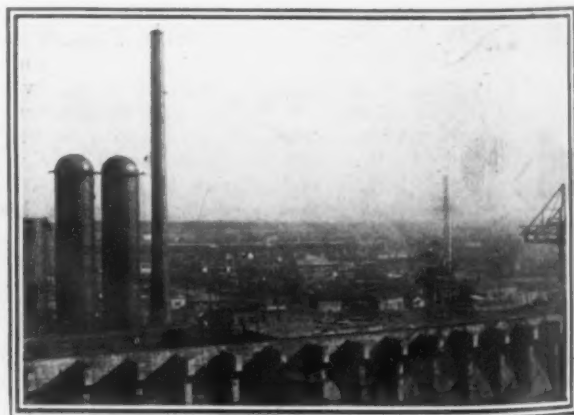
The Semet-Solvay Co. is installing all the equipment for the reclamation of coke by-products. An area 800 x 1200 ft. has been apportioned for these facilities.



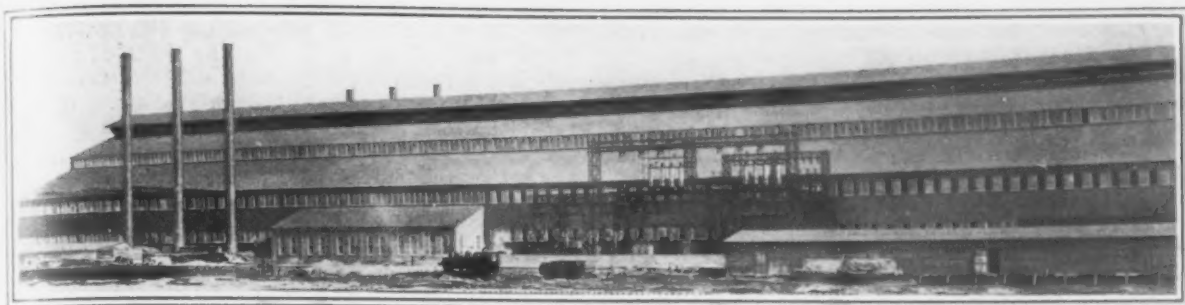
Coke Ovens Are on the Left; By-Product Equipment on the Right



Second Ore and Coal Conveyor Nearing Completion with Repair Building, the First Completed Permanent Structure, in the Background. The continuation of the ore and coal bins are in the foreground.



First Unit of Blast Furnace Nearing Completion, with Ore Hopper Adjoining Wall Directly in Front of Furnace. Temporary buildings in the background are on the site of the machine shop.



Brier Hill Steel Co.'s New Plate Mill

World's Largest Mill Building Houses an
84 and 132-In. Unit—Power Entirely
Electric—Boiler Plant Dispensed With

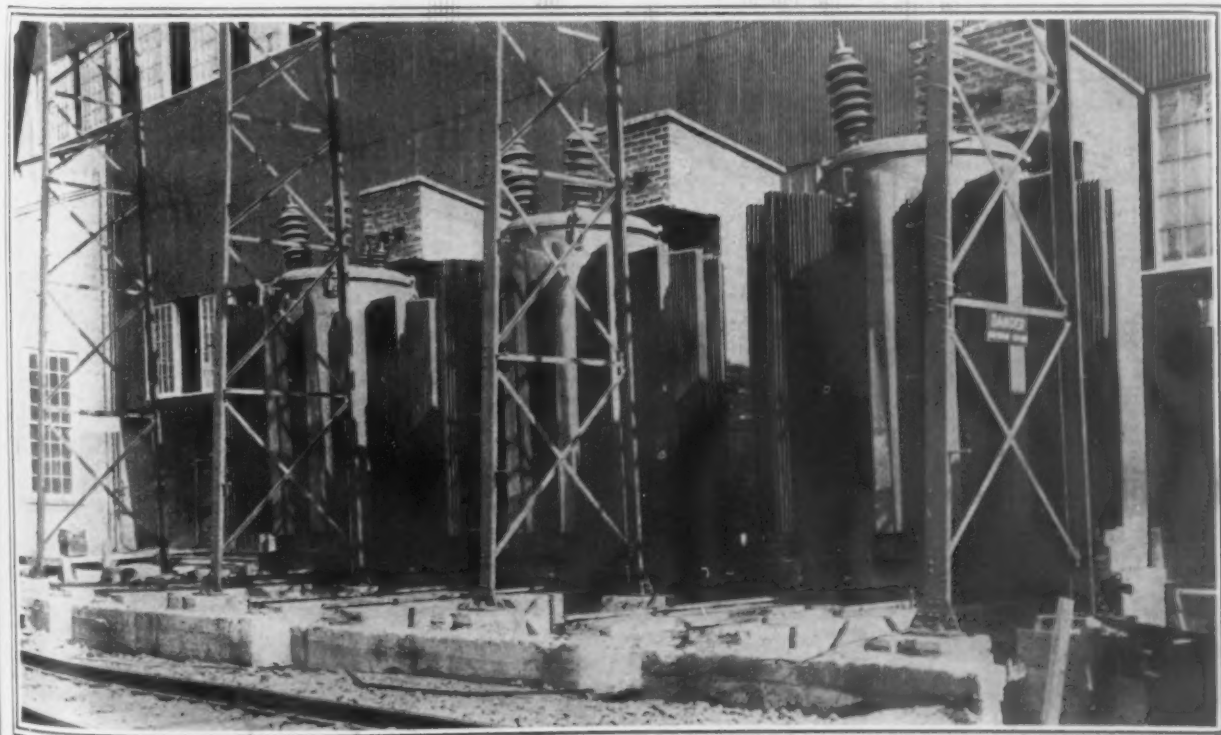
THE BRIER HILL STEEL CO., Youngstown, Ohio, has recently completed the construction of two plate mills, which are generally conceded to have a lay-out worthy of high commendation. Both mills are under one roof. The mill building is reputed to be the largest in the world. Particular attention has been paid in the design to give the capacity of heating, finishing and shipping equal to the full capacity of the rolling department. Both mills, one 84 in. and the other 132 in., are driven by electric motors with power furnished by the Republic Railway & Light Co., and should be particularly free from smoke and dirt. The boiler plant has been dispensed with, as the only steam needed will be used for heating the substation and motor rooms, and possibly for blowing scale from the steel. This steam is furnished through an underground conduit from the Brier Hill Steel Co.'s steel works, which are situated approximately a mile away from the plate mills.

The mill building consists of two aisles, each 104 ft. span and 960 ft. long, with the 84-in. mill in one aisle and the 132-in. mill in the other aisle, the long axis being approximately north and south. At the south end of this building, with its axis east and west, is

the shear building of 104 ft. span and 312 ft. long. South of the shear building, extending for a distance of 280 ft., is the warehouse building. Its total width of 312 ft. is divided into three spans of 104 ft. each. The plates from both mills are thus given a straight line movement from heating to shipping.

The 84-in. mill consists of two stands of rolls, set in tandem 77½ ft. apart. One of these stands is a two-high reversing rougher, with 32 in. x 84 in. rolls. The other, or finishing stand, is three-high, with 32 in. x 84 in. top and bottom rolls and a 22 in. x 84-in. middle roll. Both stands have steel housings, electric screw downs, enclosed pinion housings and helical cut pinions. Finishing stand has hydraulic balance and the reduction gear pinion housings are of the Kennedy type. The front and rear tables of each stand have disc rollers, running in Hyatt bearings. On each side of the three-high are tilting tables 30 ft. long with electrically-driven lifting motion and balanced by the hydro-pneumatic system.

The slabs are brought into the north end of the mill building on two standard gage tracks, giving dock room for eight cars in the building. This end of the building for a distance of 120 ft. has been left vacant.



The 3500 Kva. Group of Outdoor Transformers

It is, at present, utilized for the storage of slabs, and furnishes a satisfactory location for extension should it become necessary to install additional heating furnaces or soaking pits, in the event that ingots will have to be rolled. A 15-ton overhead crane, equipped with magnets, takes the slabs from the storage piles and deposits them on the pusher tables of three coke-oven gas-fired recuperative continuous heating furnaces 9 ft. wide inside by 44 ft. 6½ in. long outside. The furnaces are of the automatic gravity discharge type and were built, together with the 5 ft. x 125 ft. stacks, by Alex Laughlin & Co. Pushers are of the double rack type, electrically operated. They are spaced 40 ft. between centers, the nearest being 52 ft. distant from the two-high rougher. They have their combustion chambers immediately over the roller tables on which the slabs are discharged and conveyed to the mill. After being broken down to ½ in. or ⅝ in. thickness by the roughing stand the plates are finished in the three-high.

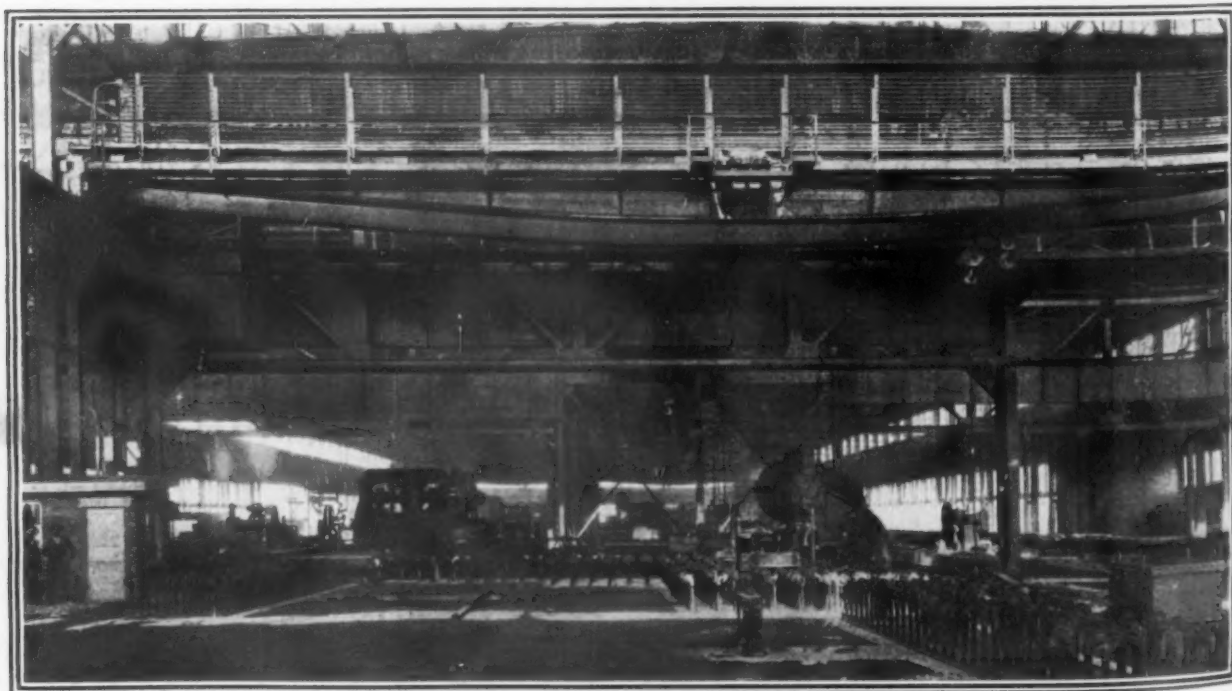
Beyond the rear table of the three-high stand are two systems of tables parallel to each other, 40 ft. apart, and practically duplicate, except that one system includes a Costello continuous annealing furnace 50 ft. long. These two systems are connected by two 40-ft. roller chain transfers, one at each end of the annealing furnace. The one system of tables, directly in line with the roll stands, is used for heavy plates, while the other is used for light plates. Such of the latter as require annealing are transferred from the heavy side in front of the annealing furnace; the others are transferred behind the annealing furnace. Each system is equipped with its own inspection table, shears, scales and shipping dock, thus increasing the actual time the roll stands are being used and practically doubling the output of the mill. A description of the movement of the heavy plate will suffice for both systems, and is herewith given in detail:

After leaving the rear table of the three-high stand the plate continues in a straight line over roller tables into a plate leveller 206 ft. from the mill. From the leveller it is discharged by a table 40 ft. long to a roller chain conveyor 140 ft. in length, which delivers it to the inspection table, which is a roller table approximately 40 ft. long. An automatic device is provided here to turn the plates up on edge, so that the under side may be carefully inspected. The plate is also marked at this table. After inspection and marking the plate is carried by another roller chain conveyor 102 ft. long and delivered to a 55 ft. roller table by which it is carried into the rotary side cut shears.

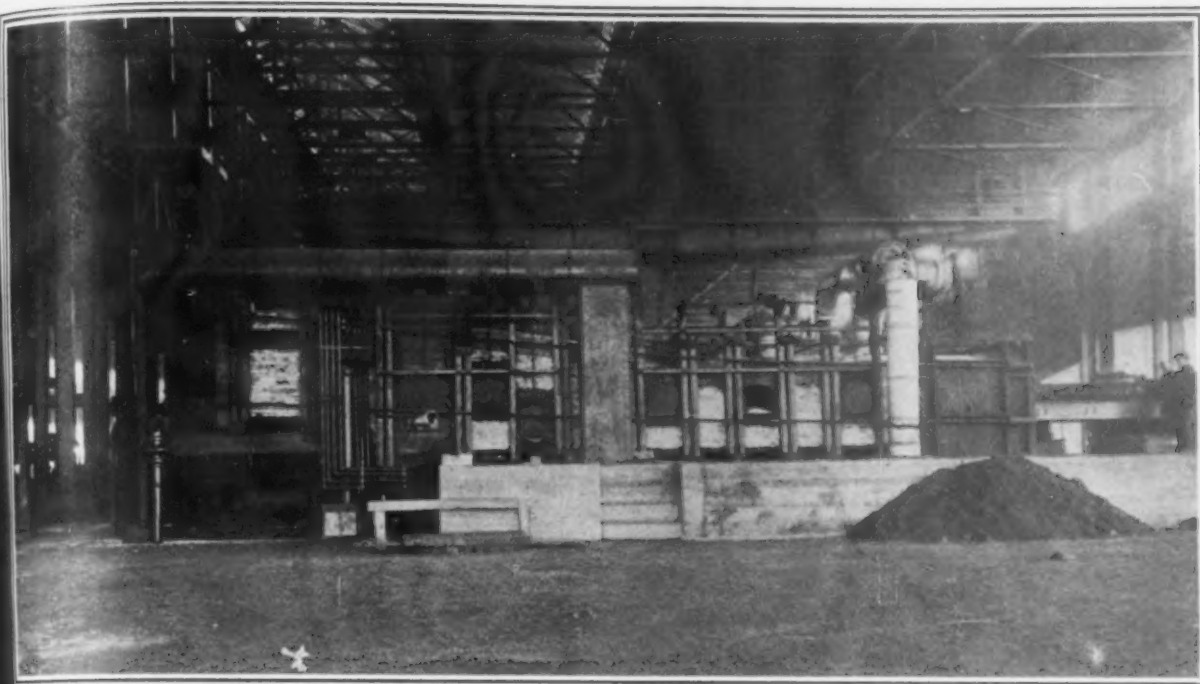
These shears trim both sides of the plate at the same time. They are adjustable for any width of plate, one side being stationary, while the other is moved by a screw driven by a motor through gearing. A gage is provided at the shears so that they may be spaced the proper distance apart without requiring the operator to get near the plate. After passing through the rotary shears the plate is pushed up against a stationary straight edge by an electric screw clamp and then travels over a roller table to a 108 in. x 1½ in. end cut shear, which is electrically driven through gearing and is equipped with magnetic hold down. This machine is 71 ft. from the rotary shears. After its ends are sheared the plate moves out over a 60-ft. roller table to a 50-ft. scale of 15-ton capacity, from which it is carried by an overhead crane to the shipping dock. The plate can be transferred just before it reaches the scale just mentioned by a lifting roller chain pull-off, which takes it from the 60-ft. roller table over a castor bed to a 156 in. x 1 in. side cut shear, 45 ft. from the center line of run-out table. This is used in case it is not desired to trim the sides of plate by the rotary shears, or in case of accident to them. Finished plates thus transferred are weighed on another 50-ft. 15-ton scale immediately adjacent to the castor bed.

The 132-in. mill consists of one three-high stand 38 in. x 132 in. top and bottom rolls and 24 in. x 132 in. middle roll. It has electric screw down, hydraulic balance, steel housings and Kennedy type inclosed reduction gear housings. Both in front and rear of mill is a 35-ft. lifting table equipped with electrically-lifting device and hydro-pneumatic balance. The rollers of these tables run in Hyatt roller bearings.

The north end of the building is the same as previously described for the 84-in. mill. The slabs are transferred by overhead crane from storage pile to pusher tables of three coke-oven gas-fired Alex Laughlin heating furnaces, the same as installed for the 84-in. mill except that they are 11 ft. wide inside. The roll stand is 110 ft. from the nearest heating furnace. After leaving the rolls the finished plate is carried by a roller table to the plate straightener, which is 146 ft. 6 in. from the mill, and thence to a roller table 105 ft. long. From this table the plate is transferred over a 90-ft. transfer of the Aiken type for a distance of 60 ft. and deposited on another roller table which carries it to an inspection table 52 ft. in length. This table is equipped with an automatic device for turning plate on edge to allow continuous inspection of the under side. The plate is then carried by a 200-ft. roller chain conveyor to another roller table 80 ft. long.



The Shear Building, Showing Shears, Scales and Castor Beds



Some of the Continuous Heating Furnaces

at the end of which it enters rotary side cut shears, which are duplicates of those on the heavy side of the 84-in. mill. The plate is then pushed over by an electric screw clamp against a stationary straight edge, thus insuring square cuts at the end shear 90 ft. distant.

This machine was built by R. D. Wood & Co., is hydraulically operated and equipped with magnetic hold down. From this point there are two routes for the plate. If of medium thickness it passes over a 90-ft. roller table to a roller chain conveyor 90 ft. long mounted in twin tandem scales of 20-ton capacity, thence taken by an electric crane to the shipping dock or warehouse. If, however, the plate is of heavy section, it is transferred from the above-mentioned roller table behind the shears over the castor bed to a 215 in. x 2 1/4 in. R. D. Wood Co. hydraulically-operated slitting shear 45 ft. distant, thence over the castor bed to a 50-ft. 15-ton scale, from which it is carried by the overhead crane to shipping dock or warehouse.

Power furnished by the Republic Railway & Light Co. is brought in at 60-cycle, 3-phase, 66,000 volts. Voltage is reduced in 3500 kva. outdoor transformers to 2200 volts. From the transformers it is transmitted to the main substation, which is on the 84-in. side, and to the motor room on the 132-in. side through spans and underground tunnels, carefully waterproofed and insulated. The 84-in. two-high rougher is driven by a direct current reversing motor of 1,000,000 pounds-foot torque. This maximum torque is available throughout the speed range, from zero to 40 r.p.m. The flywheel motor generator set supplying the power to the reversing motor consists of a 1500-hp. wound rotor induction motor driving a 2250-kw. generator of the compensated interpole type. This generator has separate exciter. Peak loads are absorbed by a 60,000-lb. cast steel flywheel 15 ft. 5 in. in diameter. The reversing motor is controlled by magnetic switches in the field circuit of the generator. The 84-in. three-high mill is driven by a 2500-hp. wound rotor induction motor running at 240 r.p.m. synchronous through a flexible coupling and single reduction gearing. The peaks are absorbed by a 35-ton cast steel flywheel 16 ft. in diameter. The exciter set consists of two direct current generators driven by an alternating current motor of the squirrel cage type.

The 132-in. mill is driven by a 5000-hp. wound rotor induction motor running at a speed of 200 r.p.m. synchronous through flexible coupling and single reduction gearing. A 60-ton cast steel flywheel 19 ft. in diameter is mounted between the motor and gear housing to take care of peak loads. The reversing motor,

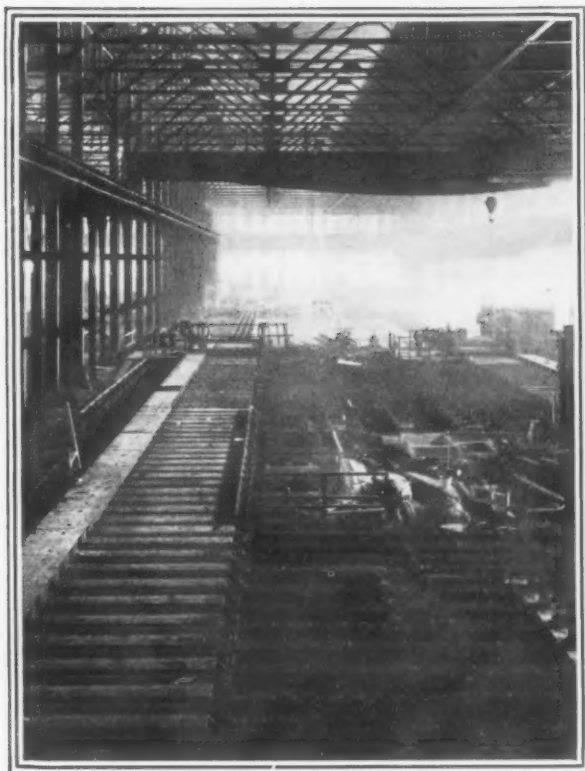
with its flywheel generator set and the motor for the 84-in. three-high, together with exciter set and slip regulators, are installed in the main substation on the 84-in. mill side of the building. Part of this substation extends into the mill building proper, the remainder being a lean-to on the outside. In this room also are installed two 750-kw. motor generators for supplying power to the table motors, etc. The switch board equipment is in the basement of the lean-to. The substation throughout has been finished attractively, with special attention paid to illumination and cleanliness. The motor for driving 132-in. mill is installed in a lean-to on the outside of the mill aisle. This lean-to is 35 ft. wide x 180 ft. long. In it are located also the hydraulic pumps, accumulator, air compressors and air receiver.

There are ten 100-ft. span electric overhead cranes, all furnished by the Morgan Engineering Co. Two are of 25-ton capacity; the others, 15-ton. In each main mill aisle there is a 15-ton crane for handling slabs at the heating furnaces and a 25-ton crane for miscellaneous work. The shear building has one crane running its entire length. The warehouse contains five cranes, one in the center aisle and two in each outside aisle. All cranes have five-ton auxiliary hoist.

Hydraulic pumps furnish water at 550 lb. pressure for the hydraulic shears, lifting table, balance, etc. There are three of these units, each of 600 gallons per min. capacity. They were built by the Wilson-Snyder Mfg. Co., and are of the motor driven horizontal duplex outside center end packed type. They have quarter box main bearings, rolling mill type frames, and are driven through Falk herringbone gears by 300-hp. synchronous motors controlled by a push button start and stop station. An automatic unloading device connected to the accumulator regulates the amount of water pumped to conform with the amount required. The pressure is equalized by a 24 in. x 15 ft. accumulator. A separate accumulator, 12 in. diameter x 12 ft., is connected to the pull back of the shears. This avoids excessive vibration and strain on the shears.

Compressed air is delivered at 100 lb. pressure by an Ingersoll-Rand machine of 900 cu. ft. per minute capacity, driven by a 150-hp. synchronous motor through short-belt drive.

All of the weighing equipment for both mills consists of scales manufactured by the Strait Scale Co., equipped with automatic dials, furnished by the American Kron Scale Co. These dials are 36 in. in diameter and are graduated to read 10,000 lb. in increments of 10 lb. At present, standard gage cars must be weighed at the steel works, but when certain railroad relocation is finished, all inbound or out-bound cars for the plate



The Run-Out Tables of the 84-In. Mill



One of the Subways Containing Switches, Fuses, etc.

mills will be weighed on Strait scales 50 ft. long and of 150-ton capacity installed on the new site.

The mill tables and similar equipment are driven by General Electric mill type direct current motors, equipped with automatic magnetic control. These controls are grouped in three small lean-to houses for the 84-in. mill and one lean-to for the 132-in. mill.

Oil for the main bearings of the mill equipment, including the electric drive, is supplied by two oil circulating and purifying systems, one for each mill. The receiving tanks for these systems are located in the basement of the substation; the filter tanks and the electric pumps on the main floor.

Circles and intricate sketch plates are trimmed by a circle shear with a maximum capacity of 126-in. diameter by 1½-in. thickness. These shears are located in the warehouse near the south end, together with a 156 in. x 9/16 in. re-squaring shear. The knives for the circle shears just mentioned, as well as those for the rotary shears, are finished on a universal grinding machine. This machine has 24 in. swing with 32 in. between centers and is motor driven. The knives for all straight cut shears are finished on a grinder with a maximum capacity of 16½ in. x 2½ in. x 215 in. knives. These two machines are located in the shear building. Rolls are finished on two 50-in. roll lathes. The lathe foundations are provided with pits holding self-dumping steel buckets into which the turnings drop. When these buckets are full the cover on pits is removed and the buckets lifted out by an overhead crane and dumped in standard gage cars or in charging boxes, as desired.

Under the end cut shears is an open tunnel containing cars and trays running on a narrow gage track. Crop ends drop from the shears into these trays. When the trays are full the cars are pulled to one side, bringing an empty tray under the shears, and at the same time the loaded tray into such a position that it can be hoisted out of the tunnel by an overhead crane and then dumped in railroad cars or else dumped in position convenient for cutting scrap in the scrap shears into suitable lengths for charging boxes. The latter are then loaded on flat cars and sent to the open-hearth ready to be charged in the furnaces.

The docks for shipping plates are adjacent to three standard gage tracks entering the warehouse from the south and extending through the shear building. The center track has a capacity of 11 railroad cars, and

each outside track a capacity of 9 cars, giving a total capacity in the building of 29 cars.

Scale from the three roll stands is sewered into a 26 ft. x 15 ft. scale pit on the east side of the building. Waste water from the rolls, together with the discharge water from the heating furnaces, keeps the scale moving.

The main mill building and the shear building are constructed of the ordinary mill type, with steel framework, corrugated roofing and siding, and ample ventilators. The warehouse building is constructed of steel framework with brick curtain walls and a roof of the Aiken type, consisting of alternate high and low bays, in each of which are continuous sliding windows the full length of the bay. The roofing is made up of asbestos composition and laid on tongue and groove sheathing.

One interesting feature of all these buildings is that the columns, instead of being the customary built-up plate and angle type, are made of rolled Bethlehem sections. The large center columns consist of three Bethlehem H-beams tied together at intervals by short gusset plates. By this method of construction a great deal of shop work, as well as the use of plate was avoided.

All the furnaces are fired by coke-oven gas supplied from the company's own by-product coke plant through a 14-in. pipe line two miles long, the gas being compressed to 5 lb. at the by-product plant.

In every particular careful attention has been given in the design to obtain first class conditions of safety. All gears are covered by solid steel plate guards. Equipment more than four feet above the floor is provided with stairways, platforms and hand rails. The entire arrangement was thoroughly studied by the company's own engineers and operating superintendents for over a year, during which visits were paid to existing installations. The design was then made by the company in conjunction with the engineering staff of the Union Engineering & Foundry Co. The electric mill drive and auxiliary equipment was made by Westinghouse Electric & Mfg. Co. The steel work for the building was furnished, fabricated and erected by McClintock Marshall Construction Co., except the roofing and siding, which was furnished by the company's own work and erected by the Lucius Engineering Co. Excavating and concreting were done by the company's own forces.

R. W. HUNT HONORED

Announcement of Prize Fund for Research Work at Anniversary Dinner

As stated in THE IRON AGE of Dec. 12, Robert W. Hunt, of Robert W. Hunt & Co., engineers, Chicago, was the recipient of many honors on the occasion of his eightieth birthday anniversary, Dec. 9. In the afternoon of that day there was a large assembly of engineers at a reception held at the Mid-Day Club, while at night he was tendered a dinner by the heads of departments and branch managers of his company and by his partners. The dinner was held at the Blackstone Hotel, there being 46 present.

On behalf of the board of directors of the American Institute of Mining Engineers, S. T. Wellman presented to Captain Hunt an engrossed set of resolutions, bound in morocco, and printed on parchment. On the cover of the book was Mr. Hunt's monogram, this being fashioned in gold and attached. The wording within follows:

1838-1918

"The board of directors of the American Institute of Mining Engineers extend to their distinguished colleague, Robert W. Hunt, a hearty greeting upon his eightieth birthday anniversary.

"They congratulate him upon his notable achievements as a pioneer in the manufacture of iron and steel, and his long and admirable service both as a practical director and as a wise critic and counselor in that art. They remember with gratitude his successful administration, for two separate periods, of the presidency of the Institute, and they recall with pride the honor conferred upon it through the award to him of the Fritz gold medal. Not least their satisfaction in the retrospect of 44 years of his membership of the Institute, with its unbroken record of loyal friendship and delightful companionship; and they pray that this record may be continued for happy years to come.

"In witness whereof, they have ordered this minute be entered upon the records of the board, and a copy be attested to be sent to Captain Hunt.

"Dec. 9, 1918."

The directors and officers of the Institute, as well as leading members, will append their signatures to the resolutions.

Prize Fund a Surprise

John J. Cone, New York resident partner in Robert W. Hunt & Co., presided. Entirely as a surprise to Mr. Hunt came an announcement by James C. Hallsted, of Chicago, also a partner, that a fund of \$5000 had been guaranteed, to be administered by the American Institute of Mining Engineers, and to serve as the nucleus of a fund the proceeds of which are to be used annually for cash prizes, with possibly a medal in addition, for the best papers presented on iron and steel subjects to the institute. It is hoped this fund will be augmented. It probably will be known as the Robert W. Hunt fund. Cash prizes are planned as an incentive for engineers to enter research work, it being realized that money might mean more than a medal to a struggling young man. In years to come the fund will be a memorial to Captain Hunt.

The award is to be made by a committee selected by the president of the American Society of Mining Engineers. Mr. Hunt was deeply affected by the announcement of the creation of the fund. He is in good

health and active, and by no means looked four-score years as he greeted his many friends. He had a smile, a hearty hand-clasp and a happy response for all. Mrs. Hunt and a few close personal friends also were at the dinner.

A Life of Achievement

Robert Woolston Hunt was born Dec. 9, 1838, in Fallsington, Bucks County, Pa. His father, Dr. Robert A. Hunt, of Trenton, N. J., graduated at Princeton College, class of 1824, and from the University of Pennsylvania. His mother was Martha Lancaster Woolston. He spent several years learning the practical side of iron making in the rolling mills of John Burnish & Co., Pottsville, Pa., and later took a course in analytical chemistry in the laboratory of Booth, Garrett & Blair, upon the completion of which he entered the employ of the Cambria Iron Co., Johnstown, Pa., for which on Aug. 1, 1860, he established the first laboratory in America as a direct part of an iron or steel organization.

In the fall of 1861 he entered the U. S. military service, was in command of Camp Curtin, Harrisburg, Pa., served as mustering officer for the State of Pennsylvania, with the rank of captain, and in 1864 assisted in recruiting Lambert's Independent Mounted Co., P. V., and was mustered into the United States service as a sergeant, having tossed up with a friend who had also participated in recruiting the company as to which one should receive a lieutenant's commission. Upon being mustered out of service he returned to the employ of the Cambria Iron Co., and was sent by it to the experimental Bessemer works at Wyandotte, Mich., of which it was part owner. He was placed in charge of those works in July, 1865, and so continued until May, 1866, when the Cambria company called him back to Johnstown to take charge of its steel business. The intention was to begin at once the erection of a Bessemer steel plant, but this was not done for several years, and in the meantime the Cambria company undertook the rolling of steel rails for the



ROBERT W. HUNT

Pennsylvania Railroad Co. from ingots produced by the Pennsylvania Steel Co.'s works at Steelton, Pa., that company's rail mill not being completed. Mr. Hunt had charge of the steel for this operation, and these were the first steel rails made in America on a commercial order.

His Contribution to Rail Steel

Later he assisted George Fritz, Cambria's chief engineer, in designing and building its Bessemer works, and assumed charge of it on its completion, July 10, 1871, so continuing until August, 1873, when he resigned his position. On Sept. 1, 1873, he entered upon the duties of superintendent of the Bessemer works of John A. Griswold & Co., Troy, N. Y. In March, 1875, he became general superintendent of the Albany & Rensselaer Iron & Steel Co., which had acquired the works of John A. Griswold & Co. and Erastus Corning & Co. This organization became later the Troy Steel & Iron Co., Captain Hunt remaining in charge until April, 1888. During those years he almost completely rebuilt the various works of the company, and also erected a large blast furnace plant of the most complete character. Mr. Hunt has taken out several letters patent on steel and iron metallurgical processes and machinery, both individually and in conjunction with John E. Fry, William R. Jones, Dr. August Wendel and Max M. Suppes. Mr. Hunt put in the first automatic rail mill tables, and later the Hunt-Jones-Suppes rail-

mill feed-tables were used under licenses by the majority of the rail mills in the United States.

On Dec. 5, 1866, he was married to Miss Eleanor Clark, of Ecourse, Mich. In April, 1888, he established the Bureau of Inspection, Tests and Consultation of Robert W. Hunt & Co., with principal offices in Chicago, Ill., to which city he removed in the spring of 1888. He served three terms as Commander of John A. Griswold Post, No. 338, G. A. R., of Troy, from which position he resigned on removing from that city.

Mr. Hunt is a member of the American Institute of Mining Engineers, and was president of the Institute in 1883, and again in 1906. He is a member of the American Society of Mechanical Engineers, and was president in 1890. He is a member of the Western Society of Engineers, and was its president in 1893. He is also a member of the American Society of Civil Engineers, Canadian Society of Civil Engineers, the Institute of Civil Engineers, the Institution of Mechanical Engineers, and the Iron and Steel Institute of England. He is a member of the American Society for Testing Materials, and was president in 1912. He is the American member of the Council of the International Association for Testing Materials.

Awarded the John Fritz Medal

In 1912 he was awarded by the John Fritz Medal Committee, representing the American Society of Civil Engineers, American Institute of Mining Engineers, American Society of Mechanical Engineers, and the American Institute of Electrical Engineers, the John Fritz medal, "for his contributions to the early development of the Bessemer process."

Mr. Hunt has contributed many papers to the proceedings of the several societies of which he is a member, and frequently lectures before scientific bodies. He is and has been for many years a trustee of the Rensselaer Polytechnic Institute, Troy, N. Y. In 1916 he received from that institute the honorary degree of Doctor of Engineering.

Mr. Hunt is a member of the Chicago, Chicago Engineers, Mid-day Saddle and Cycle, South Shore Country, Illinois Athletic, Glen View, Chicago Golf, Winnetka Country, Montreal Engineers, Engineers of New York and Mexico City Country clubs. He has always been interested in out-of-door sports, was in his earlier life a cricket and baseball player, and is now an enthusiastic golfer.

Large Fluorspar Output in 1917

WASHINGTON, Dec. 17.—Fluorspar mining made another high record in 1917 on account of the strong demand as flux in basic open-hearth steel furnaces and in the chemical, ceramic, and other industries, says a special report on this subject made by Ernest F. Burchard of the U. S. Geological Survey. Prices reached the highest levels ever recorded and stimulated new developments. The total quantity of domestic fluorspar reported to the Survey as sold (shipped from mines) in 1917 was 218,828 net tons, valued at \$2,287,722, compared with 155,735 tons, valued at \$922,654, in 1916, an increase in quantity of 40.5 per cent and in value of nearly 148 per cent. The total quantity of crude fluorspar reported to the Survey as mined in the United States in 1917 was 280,825 tons, compared with 175,165 tons mined in 1916, an increase of more than 60 per cent.

Apperson Brothers, Kokomo, Ind., recently gave a banquet at the Francis Hotel to owners of Apperson cars, the feature of the occasion being the unveiling of a tablet commemorating the completion of 25 years of successful automobile manufacturing. Among the speakers were Edgar Apperson, junior member of the firm; Thomas E. Jarrard, vice-president of the company; and William Johnson, Binns-Kingston Brass Co.

Employees of the Crouse-Hinds Co., Syracuse, N. Y., have perfected plans for an industrial school at the works. The classes will assemble three times a week for instruction. E. P. Fessinger, welfare manager of the Solvay Process Co., is chairman of the committee on instruction, and will be assisted by five teachers.

BRITISH STEEL OUTLOOK

France's Needs Are Large—Call for American Rolling Mill Machinery

From W. W. Macon, its managing editor, THE IRON AGE has the following cablegram on the latest developments bearing on European iron and steel demand:

LONDON, ENGLAND, Dec. 16.—France's requirements are put at 4,000,000 to 5,000,000 tons of steel for two to three years; 3,000,000 tons of coke annually for several years, and 40,000,000 tons of coal. France would like the Saar region from Germany for much-needed coal.

It has been estimated here that there is a present world need for 150,000,000 tons of steel, two-thirds of this representing the checked peace-time needs of the past four years. Not only is new British steel plant construction being completed, but new projects are under way and American rolling mill machinery is being sought.

Among current items in the new demand and plans for extensions are the following: The British Westinghouse Co. is increasing its capital from £3,500,000 to £6,000,000 for extensions: The Bengal-Nagpur Railways of India have bought 9000 cars. The Indian roads have placed 5000 underframes with the American Car & Foundry Co. and the Standard Steel Car Co. in the United States. For English roads 30,000 cars have been allocated.

Some Steps in Labor and Machinery Readjustment

LONDON, England, Nov. 27.—The industrial situation is befogged by politics. The Labor Party is at this writing holding off from the coalition movement thus to gain what it is after, namely, a greater participation in control and profits of industry; but interviews with those in a position to know, indicate that the majority of the labor element look to adjustment under the constitution and not by any Bolshevist movement. In spite of the governmental pledge of a return so far as labor is concerned, to the pre-war conditions few take this as likely to happen, for thinking wage earners realize that restriction of output must go if England is to maintain anything like her former hold on world commerce.

The immediate future is not rosy. Raw materials are needed in quantity for any wide program of speeding up peace-time pursuits, and they probably cannot be obtained fast enough. To what extent unemployment will be checked by a slow demobilization of the troops is not clear, but a realignment is already taking place, men seeking and being received in former occupation. Of course, this labor readjustment is of no importance as yet. Incidentally the Government plans to institute a selective demobilization to provide for industry as needs in the special branches develop.

The machine tool and small tool trade looks for a lull of three or four months. The British Government will undoubtedly put a considerable quantity of machinery on the market, but distributors are not yet able to gage the situation in this respect. One interesting fact is that Belgians are in the market for the equipment of their shops and they are offering immediate cash payments.

The Ministry of Munitions is making an inventory of the property in the national factories. The plan is to arrive at what would be the post-war price of a given machine and then to reduce this in proportion to the number of months the machine has been in operation. Presumably the result would be the price the machine should fetch if sold to the public.

W. W. M.

The John Macnab Machinery Co., 99 Hoboken Avenue, Jersey City, N. J., has changed its name to Industrial Machinery Corporation.

UMPIRE LIND'S DECISION

Holds That Company Must Deal with Business Agent of Union

WASHINGTON, Dec. 17.—In approving the decision by former Governor John Lind, as umpire in the complaint of the machinists employed by the Niles-Bement-Pond Co., Plainfield, N. J., the National War Labor Board has set a precedent that may have far-reaching influence. If followed out, it would force many plants that are not union establishments to deal with union business agents as representing their employees, although the agent is not himself employed by the company.

The chief contention centered on the fact that although the plant of the company was not a union shop upward of 90 per cent of the 400 machinists employed were union men. Up to the year 1916 they had been represented in their grievances by the business agent of the machinists' union. In 1916 a new manager was installed and in December of that year he refused to recognize or to negotiate—on a question of an increase of wages—with this business agent, because the latter was not an employee of the establishment. The increase was granted later but the question of the right of the men to be represented by an outsider was not again touched upon until May, 1918, when another demand for increased wages was made. The manager again refused to recognize or negotiate with the representative chosen by the men and again for the same reason assigned in 1916.

On Aug. 18, 1918, a strike took place in the plant on the demand for the establishment of a minimum rate. As the result of mediation by the War Department, the wage question as well as the right of the workers to be represented by the union business agent were submitted to the National War Labor Board.

The decision of Umpire Lind follows a somewhat involved process of reasoning to determine that the company must deal with the business agent. The decision is the first one approved by the Board which takes into consideration the fact that hostilities have ceased. Mr. Lind cites the fact that at present "industry as a whole is disturbed by many untoward conditions," and for that reason he does not think "that it would be either wise or just to be guided in any large degree by the very high scale of wages that was established by the Government while we were actively engaged in hostilities for the purpose of stimulating war production."

He therefore gives an increase of 5 per cent to the workmen who received more than 65c. per hr. on Aug. 1, 1918, an increase of 7½ per cent to those receiving between 59 and 65c., and of 10 per cent to all receiving less than 59c. per hr. The decision is to be operative "during the period of the war."

The War Labor Board also fixed a rate of \$1 per hr. for journeymen pattern makers in Detroit, effective as of Nov. 22. For the period between Aug. 29 and Nov. 22, it fixes the hour rate at 95c. The adjudication involves the members of the Pattern Makers' Association employed by the following companies:

Modern Pattern Works, Maxwell Motor Co., Swedish Crucible Steel Co., Frederick Kahl Pattern Co., Wolverine Pattern Works, Advance Pattern Works, Detroit River Iron Works, Acme Pattern Works, U. S. Pattern & Mfg. Co., Ajax Pattern Works, Triangle Pattern Works, E. S. Bryant Pattern Works, Locke Pattern Works, Detroit Pattern Works, Central Pattern Works, Eagle Pattern Works, Standard Pattern Works, National Pattern & Mfg. Co., Art Pattern Works.

The other questions raised by the complaint of the employees were dismissed.

From the inspection of about 2000 large plants the Fire Prevention Section of the War Industries Board has rated 466 metal-working plants and steel mills from the standpoint of fire prevention conditions, as follows: Good, or no action required, 270; fair, 79; poor, 80; bad, 37.

MORE ATTACHES NEEDED

Recommendations of Chief of Bureau of Foreign and Domestic Commerce

WASHINGTON, Dec. 17.—An increase in the staff of commercial attaches and a greater attention to the promotion of American trade abroad is the main burden of the annual report made by Burwell S. Cutler, Chief of the Bureau of Foreign and Domestic Commerce. Mr. Cutler goes at great length into the work which has been done during the war by our commercial attaches in maintaining American interests abroad as well as in co-operating with American industries at home. His report gives a comprehensive picture of the work done by the Government in the promotion of America's commerce throughout the world. Despite the war, our commercial attaches have found opportunity to do important work in maintaining the standing of American industry in markets which the lack of shipping has not enabled them to meet with peace-time promptness.

"The most pressing need," declares Mr. Cutler's report, "is for larger appropriations which will permit us to pay larger salaries (or give larger allowances) to present incumbents and to provide for new posts. We are face to face with the constant danger of having our attaches and their secretaries forced to accept the offers of private firms unless we can establish a more satisfactory scale of compensation. Besides the increased living costs must be considered the declining value of the dollar in certain countries; the most noticeable case is in China, where the rising value of silver exchange has made the dollar worth approximately one-half of its value a year ago.

"New attaches should be assigned to a number of important capitals, especially Rome, Madrid, Ottawa, Mexico City, Santiago, Chile, and Athens.

"I cannot overemphasize the increasing importance in our plan of foreign-trade promotion of these resident men in foreign countries. The commercial attache is a necessity in countries where the more important commercial interests of the United States are constantly coming up for consideration. It is important on both ends of the line; commercial inquiries relating to the broader questions are constantly reaching the Department from our business men. Very frequently prompt investigation and cabled replies are necessary. The only way that this service can be rendered is by having a trained commercial expert in the foreign country who is there for the sole purpose of attending to these commercial matters. In order to attend to them successfully, he must be in constant touch with the principal commercial movements in the country to which he is assigned. It is no reflection on the ability of the diplomats or consular officers. The diplomats and consular officers have their very broad range of functions, some of which are frequently connected with trade promotion. The functions of the commercial attaches as the representatives of the Department of Commerce abroad, with a nation-wide field, and the exclusive assignment to work and report on commercial legislation and practice and commercial organization, trade tendencies and currents, are quite distinct from those of the other established officers. The commercial attache is coming, more and more, to be recognized in international dealings as distinct a position as that of the military attache or the naval attache.

"There is another type of investigator abroad which is particularly necessary at this time. That is the trade commissioner or commercial agent—it makes no difference what you call him—who shall have the assignment to give us news about the national resources and the trade opportunities of the countries that we know very little about. There are still several countries that come within this class."

The Donner Steel Co., Abbott Road, Buffalo, has taken out permits to erect a number of new buildings at its plant, including addition to plate mill to cost \$14,000; addition to pit furnace building to cost \$9,000, and two one-story additions to cost \$6,100 and \$2,500 respectively.

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High British Prices for Steel

We have already called attention to the fact that in Great Britain prices of iron and steel have been advanced by official action, whereas in the United States, with the Government taking hands off industry, manufacturers are now quoting from \$4 to \$6 a ton lower on various finished materials than the levels established by the Price-Fixing Committee. There is also a contrast between export prices in the United States and the export prices of Great Britain. Light is thrown on the British situation by an article elsewhere from the *London Iron and Coal Trades Review* referring to the very liberal subsidies the British Government has been granting iron and steel producers. These have amounted to £2 to £3 a ton on basic steel and to £8 or more on acid steel which as is well known must be made from imported ores. These subsidies, it was stated in the House of Commons on July last, had then amounted to £47,000,000. They are to continue so far as finished steel is concerned until the end of January, while on pig iron they run through April.

It will be interesting, further, to watch the course of prices on British export steel. These are considerably higher than the manufacturers' prices to their home customers. On billets, for example, the export price is £15, whereas for domestic consumption British works have been quoting £10 7s 6d. This latter price is not greatly above the American basis, which for months has been \$47.50, Pittsburgh.

The position of the British producers and of their government seems to be that as neutral countries have been able to realize some very high prices on everything they have sold to Great Britain during the war, it is now time for a little reciprocity. This argument, of course, will not long maintain prices when competitive factors begin to work. So far as Germany is concerned, whereas all through the war there has been the fear that when peace came German steel and other products would come out in a flood and at prices that would take the business in all parts of the world, the spectacle now is of a Germany temporarily, at least, made important by internal disturbances, saying nothing of a Germany stripped of the

means of getting her product to distant markets.

So far as neutral countries are concerned, when the British steel subsidy disappears and economic conditions have free play the real race will be between British and American steel. The undetermined question is on what basis there will be free buying in world markets, of either British or American steel. Certainly not on war prices in the United States or on higher than war prices as in Great Britain.

Steel and Investment Costs

One function of the reduction in steel prices that has just been made is to set an example to industries generally, that when feasible they should reduce their prices as promptly as possible. The time element is important. This is a transitional period, one of readjustments in prices and costs. There is a divergence of interest. In some lines of business it is advantageous to have the period of readjustment strung out. In order lines the shorter the period the better. If a suit of clothes that formerly sold for \$30 now sells at \$60 and is eventually going to sell at \$40, the longer the price stays at \$60, and then the longer it stays at \$50, the better for the clothing manufacturer, as long as he can sell all the suits he is able to produce. Producers in that class want to squeeze out of the transitional period all the profits they can. Suppose there were an industry that produced nothing but cornerstones. It would want prices and costs to come down as soon as possible, as there is no market at all for cornerstones except when large buildings are being erected. It is convenient to take an imaginary case, because there are no important industries that sell their products only for works of such lasting character that it is considered appropriate to incorporate cornerstones in them. Long term investments await such reductions in costs as are likely to occur, because building too soon means a greater loss of capital during the period of decline than the return on the investment would amount to.

The iron and steel industry depends largely upon permanent construction work for its market. The investor, besides buying steel, buys various

other commodities, and also labor. He considers the cost of the investment as a whole, not simply the cost of individual items. If the investor thinks it probable that the cost of steel will come down within a reasonable time he waits for the decline, but the steel makers cannot cause him to take hold simply by reducing the price of steel. The investor must be satisfied also as to the other items of cost in his investment. Undoubtedly if the individual makers of steel had all felt that the steel market of the immediate future was their chief concern they would not have been disposed to reduce prices, for there was a strong balance of probability that without definite action prices of steel would have continued at the established levels for some time after Jan. 1. By reducing prices at once a definite sacrifice was made for the purpose of encouraging the general cost readjustment which the investor considers necessary.

Those who sell other commodities that are used in connection with steel for investment purposes now have their turn. If construction costs generally are marked to come down, the reductions should be made as promptly as possible. The example of the steel industry should be followed. That labor will see the point when presented in theoretical form is of course altogether improbable, but the necessary readjustment in labor may not require a long time. The first readjustment is that of restoring the day's performance to what it should be. In construction work particularly, the labor cost depends not merely upon the day's wages, but depends also upon the day's performance. Wage rates may come down only slowly, but the workman may over night become "afraid for his job" and determine to render greater service per day.

In the final analysis it is probable that more than half the steel normally consumed is used in investments that are made in expectation of an annual income and eventual return of the capital in a period of years, and the cost of such investments, relative to the prospective costs at later times, will determine the amount of investing that is done and therefore the demand for steel for such purposes. The sooner the cost of such investments comes down the sooner the demand for steel will expand.

The Machine Tool Problem

In the early days of the war, when British infantry was well nigh helpless against German shells, and France at the Marne had only a dozen large-caliber mobile guns, the mainstay in their extremity was the American machine tool builder. The measure of the task they set, demanding quick assistance, is summarized aptly by one British commentator:

Toward the end of 1914 an American, who represented one of the principal makers of turret lathes, when asked the approximate production of munitions of various kinds in Germany, as against Great Britain, said 20 times the quantity would be quite a reasonable estimate. This was long before the Ministry of Munitions was formed in this country [England]. Fabulous sums were voted by the authorities to be spent on the machine tool program in order to enhance the output

of munitions of Great Britain, and to approach the output of the Germans. When the Ministry of Munitions was formed, Lloyd George, then Minister of Munitions, asked some of our experts what they thought was approximately the output of German munitions against ours, and when he was told that a reasonable estimate would be 10 times the quantity, he was staggered.

The effort of the United States in the past year to meet the demands of the American Expeditionary Forces compelled a still further expansion of capacity, and under such tremendous stimulation the machine tool makers of this country were estimated to be manufacturing at the rate of \$200,000,000 a year, equivalent to \$100,000,000 at 1914 values, or twice the \$50,000,000 annual rate of output at that time. For carrying out its munition program it is estimated that the Government now has on hand or under contract \$300,000,000 worth of machinery, of which \$200,000,000 is standard machine tools.

This enormous quantity of metal-working machinery, which must eventually for the most part be put to new uses, first going on the market for repurchase by private interests, presents a problem of the reconstruction period that calls for the most careful handling by the Government. To throw upon the market what amounts to the output of the entire industry for two full years at the recent war pace holds dangerous possibilities for the entire industrial community. Tens of thousands of mechanics may be thrown out of work, unless an agreement can be reached by the builders of machinery and the Government that will conserve the great interests involved.

A commendable spirit of co-operation was shown in New York last week at the conference of the National Machine Tool Builders' Association and the National Supply and Machinery Dealers' Association with the Committee on Salvage of the War Department, and the plan now proposed for controlling the resale of this vast store of equipment augurs well for a minimum of dislocation in the return to the competitive conditions which are now to be expected.

Labor and Unrestricted Production

Out of many thought-provoking expressions at the recent meeting of the American Society of Mechanical Engineers, two had striking significance. One was to the effect that men do better work in less time when they are taken into the confidence of the employer, when costs are shown to them, and they understand the inside relations of production to product and to purchaser. It was said that men had instinctively set about the reduction of repair bills when they were informed of the cost, and that workmen when given records they could intelligently grasp had earnestly striven to beat the old figures and tests, to the improvement of output in quality as well as in quantity.

This implies greater profits and more pay. But beyond such results, is not this better understanding the real thing that has been sought in a workable scheme of profit-sharing?

The second expression referred to was even more radical and unexpected. Will labor as a result of the war abandon output restrictions? That was answered in the affirmative by an engineer obviously sincere, and one whose talents and expe-

rience lent weight to his words. But very many of his hearers are yet to be convinced. While the war has brought in its wake some surprising changes in methods, we may well hesitate to accept such a statement at its face value.

The past year has shown in various directions an attitude that indicated anything but a desire for unrestricted production. There have been exceptions, but they have rather proved the rule. In lack of discipline, which was the common impediment to shop production, there were flagrant cases everywhere. Jobs were easily got and pay was high and labor restive under even the mildest control. What was lost through "floaters" going from one shop to another will never be fully known, but it was appalling. A labor turnover of 1500 per cent has been reported. There is a record of the travels of one "floater" in a single city in New England who from August to November held some fifteen situations, if that word can be used to describe so fluid a state of being.

It may be that some object lessons of the war will be heeded, as for example the records of some of the women who have held soldiers' jobs in shops and have pushed production beyond all pre-war standards. Perhaps, too, the returning soldier has learned what can be done by whole-souled co-operation under good leadership, and may see that the same methods that win wars also bring success in industry.

A leaf from actual experience may shed some light on the problem. A foreman resenting a "lay-off" during dull times some years ago took his savings, borrowed a little more money and went into business on his own account. Six months or a year slipped by and one day he met his former employer, who complimented him on his enterprise and inquired how things went. In the exchange of confidences that followed it came out that the former foreman was working longer hours than ever before, that he went out after work to do, that he went out after some of the pay for the work when it was done, and that in the meantime he "helped" in both shop and office. The employer listened with sympathy. He knew. He knew also enough to say, "You didn't have to do anything like that when you worked for me." "Oh, no; that's different," was the reply.

It must be recognized, and that with some degree of apprehension, that there is going on in Europe even in the Allied countries a labor flux with possibilities that we do not care to contemplate. How it will all terminate and to what it will bring trade customs and conditions it is too early to say. Sudden changes do not usually mean that the new order has power to establish itself. To every indication of freedom of output we shall give due recognition, but it is well not to look for an early and complete change of heart among those never friendly to unrestricted shop production.

Chairman Phillips Entertains

Members of the Sub-Committee on Scrap Iron and Steel of the American Iron and Steel Institute were the guests the evening of Dec. 10 at a dinner tendered at the Art Club, Philadelphia, by W. Vernon Phillips, chairman. Although the committee has not been formally discharged by the Government, it regards its functions as practically ended, and the dinner was in the nature of a farewell meeting.

New Metal Exchange Formed

At the recent meeting of the non-ferrous group at the War Emergency and Reconstruction Conference in Atlantic City, a resolution was offered by J. M. Brile, vice-president and sales manager, United Smelting & Aluminum Co., Inc., New Haven, Conn., that the metal exchange of the United States is not a representative American exchange and that its market quotations are not representative of actual transactions, and therefore not worthy of support by the metal trades; and further, that a suitable metal exchange, representative of the great American metal-producing and consuming trade, should be formed immediately.

Although those comprising the non-ferrous group were believed to be in accord with the spirit of the resolution, it was not thought advisable to push the matter before the conference, as it was deemed distinctly a problem for the metal-producing and consuming trade of America to take into consideration. In his address before the metal group Mr. Brile said in part:

"America produces the bulk of the world's supply of basic metals, copper, lead and spelter. Before the war, prices on these American-produced metals were made on the German and English metal markets. America invariably followed the London and Berlin metal exchanges.

"The producer and consumer of American copper and spelter awaited anxiously each day for the London Metal Exchange quotation, so that he might buy or sell his metal accordingly.

"Why was it necessary for America to follow foreign interests to fix the prices on American copper, American lead and American spelter? It was because this country possessed no suitable metal exchange worthy of the name, where prices might be made by actual transactions covering the purchase and sale of these metals. America, by reason of her importance as the world's greatest metal producer, of right ought to be the metal market of the world—with the world looking to America to supply at American prices the metal that American labor produces and American capital finances. Not only would it make our position in raw materials pre-eminent, but it would enhance our business in metal products of all kinds, were America known and recognized as it ought to be known and recognized, as the world's primary metal market. America can only be so recognized as the world's metal market if she has established a real, impartial, representative metal exchange. Instead of America anxiously awaiting foreign cables indicating the price of American-produced metals, the world would anxiously await news from America as to the market on these metals."

Raw Materials Should Not Be Sacrificed

In an address before the Southern Commercial Congress at Baltimore, Burwell S. Cutler, chief of the Bureau of Foreign and Domestic Commerce, referred as follows to possible liquidation in raw materials:

"We must guard ourselves against motives of fear in the business world. At present most of our factories and storerooms are filled with raw materials and commodities which the owners may be tempted to sell at sacrifice prices in order to restore cash balances wholly depleted by war taxes and purchase of Liberty bonds. Precipitate action of this kind, if based on a fear that raw materials will generally decline in value will bring individual and national loss. The most knowing and deliberate business men realize that the available supply of basic materials for human use and consumption is many times less than the world will need for some years to come. This is the inevitable result of four years of systematic destruction without replenishment in every quarter of the globe."

Before the war electric steel was not noted in the official returns of output in Great Britain, according to the Mining Magazine. In 1917, however, 110,000 tons was made, of which 90,000 tons was in the form of ingots and 20,000 tons in the form of castings. There are now more than 50 electric steel furnaces at work in Sheffield.

New Institute Members

The following are newly elected members of the American Iron and Steel Institute:

Active Members

- Edward Thomas Butler, Trumbull Steel Co., Warren, Ohio.
 W. Sanford R. Cole, president Napier Iron Works, Nashville, Tenn.
 Stuart J. Cort, Bethlehem Steel Co., Bethlehem, Pa.
 L. C. Crewe, LaFollette Coal & Iron Co., LaFollette, Tenn.
 Charles F. Fairbanks, 304 Sears Building, Boston.
 Samuel Lewis, Bethlehem Steel Co., Bethlehem, Pa.
 William H. Lindsey, vice-president Napier Iron Works, Nashville, Tenn.
 Harry R. Moore, Republic Iron & Steel Co., Youngstown, Ohio.
 J. M. Overton, president Suwanee Iron Co., Nashville, Tenn.
 Harry Wharton Summers, Carnegie Steel Co., Philadelphia.

Associate Members

- H. P. Ambrose, Standard Iron Co., Nashville, Tenn.
 Edgar F. Blessing, Doehler Die Casting Co., Brooklyn, Cincinnati.
 James A. Green, president The Matthew Addy Co., Cincinnati.
 L. F. W. Hildner, vice-president Pittsburgh Bridge & Iron Works, Pittsburgh.
 George E. Klingelhofer, president Pittsburgh Bridge & Iron Works, Pittsburgh.
 Thomas A. Arthur, vice-president Hickman, Williams & Co., Pittsburgh.
 Arthur Forbes Braid, Metal & Thermit Corporation, New York.
 Frank H. Guppy, secretary Mothrup Steel Products Co., Beaver Falls, Pa.
 Julius Kahn, president Truscon Steel Co., Youngstown, Ohio.
 C. Douglas Mercer, Clinton Wire Cloth Co., Boston.

Elected to Associate Membership

- James Thomas Mothrup, president Mothrup Steel Products Co., Beaver Falls, Pa.
 Joseph Richard Rogers, president A. Haukey & Co., Inc., Rockdale, Mass.
 Quincy W. Wales, Brown-Wales Co., Boston.
 Thomas Coleman Ward, president Hickman, Williams & Co., Pittsburgh.
 Charles D. Rawstorne, vice-president Freyn, Brassert & Co., Chicago.
 Mowry P. Simpson, vice-president Mothrup Steel Products Co., Beaver Falls, Pa.
 Frederick W. Walters, Steel Sales Corporation, Chicago.
 I. Fenwick Young, president Young & Vann Supply Co., Birmingham, Ala.

Part of Machinery in Winning the War

WASHINGTON, Dec. 17.—The report of the Chief of the Bureau of Steam Engineering of the Navy Department lays great stress on the part machinery and mechanical appliances played in winning the war. The number of manufacturing plants in which material was inspected during the past year was 2,067, an increase of 107 per cent over the preceding year.

The Navy Department adopted the Liberty motor used by the Army because of the generally admitted military advantage of having one type of airplane motor. The Navy obtains all its motors through the Aircraft Production Board, says the report. Orders have been placed for 4103, the delivery of which is to be completed by Jan. 1, 1919, and of these 1273 have already been received and distributed to the various naval air stations in the United States and abroad. Approximately 1000 Curtiss 100-hp. engines have been purchased for use in training planes at naval air stations in this country; also a large number of 200-hp. Curtiss engines, 150 Hall-Scott four-cylinder engines, all of which were installed in Navy seaplanes, and in addition 521 Hispano-Suiza engines were purchased, 493 of which were delivered by Aug. 1.

Since January, 1918, approximately 6000 propellers have been ordered, of which 2900 have been delivered. These were for HS-1 flying boats. For the H-16 flying boats 4000 propellers were ordered, of which 1700 have been delivered.

The bureau, says the report, has done a great deal

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of work on the design and application of radiators for airplane motors, a design having been completed which eliminates a weight of approximately 36 lb.

Much time has been spent during the past year, the report says, in general engineering design, especially with regard to the application of the Liberty motor to seaplanes. The work done covered starters, priming devices, the development of a flow meter, pneumatic spark and throttle controls, an oil-cooling system and the standardization of the fittings of the engines, in order to make its installation interchangeable.

Placing Competent Men

The Professional Division of the United States Employment Service, with headquarters at 16 East Forty-second Street, New York, is making an effort to place thoroughly competent and equipped officers and men of the Army and Navy in civil positions for which they are best fitted. University graduates in mechanical, electrical and civil engineering and in chemistry, and other technical men with several years of practical experience, are now registered with the Professional Division. The record of each man is carefully investigated before registration is permitted. Employers seeking such men are asked to inform the office of the precise nature of the positions available. Only men well qualified for the positions are sent to employers.

The Minneapolis Steel & Machinery Co.'s branch office in Spokane, Wash., has been moved to 114-116 South Monroe Street. The Spokane branch has taken over the machinery business of the various branches in Oregon, Washington and Idaho. P. E. Lattner is contracting engineer.

The Export Future for Machine Tools

Outlet Essential to Our Labor and Capital—
\$100,000,000 Worth Accumulated—Influence of Foreign Exchange—British Program

BY JAMES W. HOOK†

THE increase in the manufacturing capacity of America's machine tool industry, due to the war, amounts, I am told, to about 100 per cent of its pre-war size. This increase is not alone represented in the enlargement of old established shops, but also in the creation of entirely new industries, which are ready to claim their share of the business. Now that the war is over and the demand from that source eliminated, the necessity for exploiting the foreign machine tool market is greater than it ever has been.

Great War-Time Increase in Output

During the five years preceding the world war, our exports of machine tools reached a volume in 1913 of \$16,097,315, of which 70 per cent represented exports to Europe. The total manufacturing capacity of machine tools at the beginning of the war was approximately \$100,000,000 per year. During the four years of war the exports rose until in 1917 they struck the enormous volume of \$84,935,410. This great increase was partially due to the increase of about 50 per cent in prices. On the basis of pre-war prices, this volume would be reduced to approximately \$56,000,000, or an amount about three and one-half times the exports during the years immediately preceding the war.

When the armistice with Germany was signed the total producing capacity of the American machine tool industry, as near as we can estimate it, was about \$400,000,000 per year. Reduced to pre-war costs, this would total about \$250,000,000. Reduced further to a straight time-labor basis, it would amount to about \$200,000,000, on a pre-war basis. Estimating domestic consumption for the next year on a pre-war basis at \$100,000,000 (and it surely cannot be more), we have a surplus left for export of an equal amount, or \$100,000,000 at pre-war value.

To sum up, the industry in the past four years has doubled in size, with a domestic market capable of absorbing only one-half of its output, and with an enormous surplus of machines in the hands of our latest customer, the United States Government, that must be disposed of.

Allied War Demand Met

When the war began, Germany, Austria and Belgium were immediately eliminated from the machine tool world. All belligerents were forced to turn all of their manufacturing capacity to the production of munitions of war. This meant that the demand for machine tools in France, England, Italy and Russia had to be supplied by America. Germany and Austria, being shut off from the outside world, had to produce their own. The result, of course, was a tremendous increase to the American machine tool industry. It went forward by leaps and bounds, and its export market quickly assumed enormous proportions. England, Italy, France and Russia bought millions of dollars' worth of American machine tools. Then Russia went out of the war and her purchases immediately dropped to practically nothing.

The next step was America's entrance into the war, which resulted in the munitions industries of France, England and Italy stopping expansion and leaving America to build a war machine greater than any that had yet been produced. This turned the tide back again from export to domestic business and left the great shops of our Allies practically fully equipped with American machines which were rapidly wearing out.

So great was America's effort that practically the

whole machine tool capacity of the nation was absorbed by it alone. Great Government shops, equipped with millions of dollars' worth of machine tools, were built here and in France. Hardly were these shops ready for operation when the war ended, leaving all of this vast quantity of machinery, practically unused, on the Government's hands. Machine tool factories all over America also have millions of dollars' worth of machines in process of manufacture.

The Enormous Surplus Now a Menace

Now the question is: What will become of this great surplus? Manifestly, it would be most dangerous to the industry as a whole if the Government, after dismantling these plants, should offer this machinery, as is the usual custom, to the highest bidder.

On account of the very great volume of tools that some manufacturers have supplied it would work a great hardship on them to buy all of it back. On the other hand, if the Government sells this material promiscuously, a great quantity of it will go into the hands of house-wrecking companies and curb-stone traders who are only interested in buying it cheaply in the first place and selling it at any price whatsoever, so long as that price yields them a profit.

A Plan for Controlling Output

Can the machine tool industry afford to have this thing happen? I think not. Personally, I should like to see the Government make each manufacturer the special disposition agent of his own line for Government account. This would mean, of course, that the Government would have to wait a little longer for its money, but is it not wise that it should? And does not the past loyalty of the machine tool builders of this country entitle them to liberal consideration?

Labor also must be considered, and I think the Government would welcome some well defined plan looking toward keeping the machine tool industry going at a reasonable speed in order that the army of labor which it commands can be kept employed. If the industry is demoralized the labor involved cannot expect very much consideration.

Until this matter is settled the whole industry will be on a basis of uncertainty. Machinery users all over the world are expecting a drop in prices and are slowing down on purchases. Machinery dealers, not knowing what machines will be thrown on the market any day, naturally are not ready to buy stocks without being protected by the manufacturer on the matter of prices. Once the policy of the Government is fixed, and provided it is a policy that will protect the manufacturer, I feel confident that buying will be resumed. My belief—and it is shared by many who have observed conditions abroad—is that we need have little fear of any surplus of machinery held by nations other than our own.

The Fallacy of Forcing the Market

Following closely upon what I have said in regard to this matter of controlling our great surplus of machine tools, comes the danger of the great producing element of our nation falling heir to the economic fallacy that it is wise to sell goods to any purchaser whether he really needs them or not. Nothing returns a benefit to its producer which is not consumed.

Practically speaking, the manufacturer who has been building machines wholly for war work would be very near-sighted if he attempted to keep his shop going at top speed by insisting upon people buying

*From an address before the National Machine Tool Builders' Association at New York, Dec. 10.

†President Allied Machinery Co. of America, New York.

more of his machines than the market can consume. In some instances, manufacturers have urged that we buy large stocks of their goods on the theory that their shops require business. How manifestly uneconomic this would be!

First, we could not possibly buy a sufficient quantity of machines to maintain their present speed of manufacture more than a month or two—in many cases not half so long. Suppose we did keep their shops going full blast for that length of time. In what condition would the manufacturer find himself at the end of the period? Simply this. Warehouses filled with his machines built at war costs, and the necessity for his lining up with the demand of the times any way. In other words, he would simply be prolonging the agony. The only thing to do at present is to realize that we are on an entirely new basis and that the great underlying source of our past enormous demand disappeared entirely with the coming of peace. We must not fool ourselves at this stage of the game. We have got to sell goods now—not simply take orders for them.

The Work for Machine Tools To-day

The great privately owned shops of the world are greater to-day than ever before. Their machinery is badly worn. Railroads in every country are needing equipment of every kind. The shelves of the world were never so barren. Thousands of shops of Belgium and Northern France must be rebuilt; the coal and iron mines of France must be restored; the textile mills of Belgium must be re-equipped; sugar mills all over the world must be repaired; new roads must be made, and not an item of machinery required for these industries can be constructed without the aid of machine tools.

What we need is a definite Governmental policy looking toward a protection of machine tool prices, augmented, of course, by a great selling organization of the machine tool industry itself. With these assured it will not be a year before the machine tool industry of America will enter again on a prosperous era.

American Tool Builders Excel the World as Specialists

The basic law of all exporting, when conditions approaching normal arrive again, will apply to machine tools as well as to any other product. That America can compete in its manufactured products with Europe seems to me to be certain. We still have a distinct advantage in our method of manufacture over other countries. On account of her great domestic market, America has been able to develop manufacturing specialists. For instance, the manufacturer of milling machines in this country can develop a large and lucrative business in that line alone. The same is not true of other countries where the local markets are more restricted. Investigation of the manufacturing industries of France and England proves this. Seldom do we find a manufacturer there making but one line of goods. Even if this policy is changed in the future, it will require many years for Europe to overtake America. Mass production of specialties not only decreases labor costs and improves manufacturing methods, but also makes for a higher excellency of product and more rapid development and improvement in the machines themselves.

Salient Factors in Successful Exporting

Another thing which the war taught America is the necessity of selling abroad from stocks on the ground. We cannot expect to compete without them.

Extension of credit is another important factor and, whereas we used to demand cash for our goods, we must in the future grant longer terms of credit than ever before and, thanks to the growing organizations of some of our biggest American banks, this will be perfectly convenient and possible.

Extremely important, too, is the necessity for crating our export shipments in the smallest possible space and in the most substantial manner. In the hundreds of reports that I have reviewed from all parts of the world, giving us rules to follow in exporting, the main point of caution is the matter of boxing. The Government, too, in its great overseas shipments during the

war, has been so impressed with the necessity of proper boxing and crating that it has issued a bulletin on the subject.

Following this, of course, is the matter of packing lists, containing necessary information to enable the foreign customer to get goods through customs without delay and at the lowest possible cost. In a great measure, American shippers have learned many tricks of exporting during the war. The necessity, which is real now, for maintaining an export trade will quickly place the basic rules of exporting alongside the multiplication table in the intellect of American business. The need now is one of service and no people in the world will go further to give real, tangible and satisfying service to customers, once they know what is wanted, than the people of America.

Favorable Foreign Exchange a Detriment to Sales Abroad

The matter of exchange is also important from the standpoint of export business. Exchange simply means the value of the currency of one country in terms of currency of another. If the United States dollar is worth in excess of its normal value at any particular time, it means that your goods will cost your customer more in his own currency in proportion. This often puts the manufacturer at a disadvantage and, unless his agent has some means of disposition of the native currency which is paid, other than by converting it immediately into dollars, then native manufacturers can greatly undersell.

This problem will, of course, be materially simplified when America begins to buy great quantities of foreign merchandise for delivery to all markets of the world. It will enable us to virtually trade in commodities, using exchange merely as a convenient expression of value. This will be possible when our merchant marine is plying all waters of the globe. Exchange in many countries, at the present time, is very much in favor of the dollar, which means an increased cost in native currency for your goods. This exchange disadvantage, together with the added disadvantage of extra freight and insurance, to say nothing of the customs duties, naturally means that the lowest possible cost of production must be obtained by the manufacturer who will have to do everything in his power to reduce the cost of his machine.

German and English Methods in Foreign Fields

If we will study the methods employed by the two greatest merchant nations of the world before the war, England and Germany, we will find that the former built up her great foreign business through: (1) Merchant shipping; (2) investment of money in foreign countries in industries that formed permanent markets for her merchandise. Germany obtained her foreign business through: (1) Merchant shipping; (2) salesmen combing every market of the world. Germany did not spend so much money abroad, which only proves her former imperialistic aims, which demanded that she keep her money at home.

The United States' Position in the World's Trade

America, due to her growing merchant marine, and also to the fact that she is now the greatest creditor nation in the world, is in position to combine the two methods above described. She will have to furnish means to rebuild the devastated regions of Europe. Her credit will be sought in South America and the Orient. Her growing merchandising firms even now are engaged in the task of extending their selling organizations to all markets of the world. Her ships are rapidly growing in number and (provided our seamen's laws are amended to match with those of other countries) will soon be entering all ports of the world.

America's Exports Controlled by Foreigners

How different is the foreign trade aspect to-day as compared with four years ago: Then, strange as it may seem to you, the bulk of America's exports was controlled by foreigners. Several of the European coun-

tries, recognizing America's provinciality in the matter of the sale of her products, came to America and formed export houses of their own to sell American goods abroad. I have one such house in mind which did an annual import and export business with South America totaling as much as \$30,000,000 a year. Others obtained the exclusive selling rights of American manufacturers in the most important foreign fields.

When the war began many manufacturers in this country found their sales organizations in many of the best foreign markets completely destroyed. Then, and only then, did it dawn upon this country how dependent it was upon foreign export houses and sales agents for its export trade. The situation might have proved disastrous for much of our export trade had not the war assumed such gigantic proportions as to tax the manufacturing capacity of the entire world. The great demand for almost everything, machinery especially, afforded our manufacturers the opportunity to make new selling connections. The great expansion of the manufacturing capacity, which also followed, has been fully equaled in the other belligerent countries.

Free European Markets a Thing of the Past

There protective measures of all kinds will be established to give their industries every possible advantage. This is necessary in order that the exports of those nations can transcend their imports sufficiently to assist them materially in paying off their great foreign debt. We cannot expect the free markets in those countries that we enjoyed before the war. Those nations, as a unit, are going to encourage their own manufacturers in every possible way. Already governmental purchasing organizations in France, England, Belgium and Italy have been created, whose duties are to visé most carefully and cautiously every item to be imported. National patriotism will be brought into play and the native houses importing goods from other countries are in duty bound to buy what is needed in their own country if they possibly can.

In France they have already been asked to do this. In England the leading manufacturers of machine tools have formed an alliance for the purpose of creating a world-selling organization of their own. Quoting from their circular, their policy is as follows:

A New Powerful British Tool Export Combination

I have here the circular of the Associated British Machine Tool Manufacturers, Ltd., 34 Victoria Street, London, made up of the following English manufacturers of machine tools:

Archdale & Co., Ltd.,
Asquith, Ltd.,
Butler & Co.,
Churchill Machine Co.,
Kendall & Gent,
Lang & Sons,

Parkinson & Sons,
Richards & Co.,
Shanks & Co.,
Smith & Coventry,
Ward & Co.

They say in their circular:

"Selling Organization—Having made satisfactory arrangements regarding the production of the best possible machines, and being firmly convinced that the British machine tool makers can offer and supply machines of the highest quality, equal to, if not better than, those of any other country, the company is making every effort to establish an efficient sales organization to further British trade in all parts of the world.

"Overseas Markets—It is a matter of common knowledge that British machine tool makers have not been represented in overseas markets in the past by thoroughly competent agents, and that their interests have suffered severely in consequence. It has been decided, therefore, that the A. B. M. T. M., Ltd., should open its own branch offices where there is sufficient large demand for its products. This has already been done in France and Italy, and other branches will be opened as circumstances permit, each branch having a competent engineer as manager, also machine tool expert representatives appointed after careful selection."

This tells you what your competitors in England are getting ready to do, and I thought it would be interest-

ing to you. This came from a man who has just returned from England, and was sent over there by us to investigate the situation.

For the present we can only hope to sell in those countries the things that are actually and immediately needed. Their doors to-day are practically closed against everything but raw material. When this ban is removed, and we can reasonably expect that new trade treaties growing out of the peace conference will force it to be at least modified, we will need to have real American selling organizations on the job. These are necessary to insure the fullest loyalty to American goods and the characteristic zest and industry in the art of selling.

Put None But Americans on Your Export Staff

If there was an incentive before the war for Germany to test the market with our machines and then make those machines herself, the incentive now is a hundred-fold greater. If any nation before the war could regulate the amount of American exports of machinery by controlling their sale, its incentive to do likewise, now that the war is over, is a thousandfold greater. It is a formidable barrier to foreign trade expansion that a manufacturer builds around himself when he intrusts his foreign selling to any foreigner. England and Germany followed no such method and these nations have engaged in foreign trading for hundreds of years, and, as we all admit, are past masters in the art.

The United States should be prepared with her own sales organizations. She should have her own export houses with selling branches in all markets of the world. She must assume the task of disposing of her own manufactured products. Herein, then, lies the answer to the manufacturer who asks, "What can I do to strengthen the nation's trade with foreign countries?" He must insist upon selling through American houses. He must insist so hard that an adequate number of such houses will be established to take care of his foreign business. The Webb law provides for the creation of group selling organizations by manufacturers. Under its provisions, also, export houses can join with manufacturers for foreign trading.

A movement of this kind on the part of our manufacturers will encourage the establishment of American houses in foreign countries. They, in turn, will encourage the establishment of banking facilities. Banking facilities will encourage investment in foreign securities and industries and, as these grow in size and number, the circle of America's influence will, likewise, grow to vast and, we may say, almost limitless proportions.

Manganese Ore Exports from Brazil

The exportation of manganese ore in the first six months of 1918 amounted to about 174,664 tons as compared with 245,088 tons in 1917, 240,090 tons in 1916, 102,870 tons in 1915 and 85,000 tons in 1914. The reason for the diminished exportation as compared with 1917 is largely attributable to the difficulties of transportation over the Central Railway, which carries all of the ore from the centers of production in the State of Minas Geraes to Rio de Janeiro, the principal port of exportation.

The average price of manganese ore in the past four years has been as follows: In 1914, 22 milreis per ton; in 1915, 29 milreis; in 1916, 55 milreis; in 1917, 93 milreis, and the average price in the first six months of 1918 reached 117 milreis per ton.

The Foundrymen's Supply Co., 84 Detroit Street, Milwaukee, dealing for several years in foundry supplies and equipment, has incorporated its business under the same style, with an authorized capital stock of \$10,000. The incorporators are Orra L. Hollister, A. M. Jones and R. S. Holland, who comprise the principal officers of the new corporation, and were the original owners of the business.

BUYING FOR THE NAVY

How Objectionable Practices Have Been Changed —The Scrap Problem

WASHINGTON, Dec. 17.—Few industrial plants have brought their work to a greater degree of working efficiency than that attained by the purchasing branch of the Navy Department during the war. The elements involved in the plan followed are summarized as follows by Paymaster General McGowan, in his annual report:

"A knowledge of facts in each industry—the labor supply, the financial conditions, the capacity of the industry for production, the probable war demands, substitution for materials previously available, the expansion of producing capacity, the reduction of consuming capacity, the transportation supply, the application of priority in manufacture, previous and present costs of production and pre-war standards of profit in the industries—of all these and many other facts which it became necessary to know, as the scope of Navy purchasing became national, made specialization in the purchasing organization a necessity."

It is an interesting story of the method by which this Navy Department bureau increased its purchases from \$27,000,000 a year before the war to a highwater mark of \$30,000,000 in a single day and a yearly total of more than \$500,000,000. There is some interesting detail about the fight the bureau made to eliminate objectionable bidders.

Irresponsible Contractors

"The Navy has struggled for years with the irresponsible contractor," says the report. "Consideration has been given to the establishment of an admiralty list as adopted in Great Britain. The law has given ample power, however, to reject the bids of any concern not a manufacturer or a regular dealer; and the elimination of the professional contractor has followed as the natural result of careful administration."

"A year ago the percentage of brokers bidding for Navy business was between six and seven. To-day this percentage has been cut down to less than two. At one opening a year ago there were 128 bidders without a middleman among them. This record was more than equaled during the past year, there being in one case 195 bids received, every one of which came direct from a bonafide manufacturer."

Scrap and Salvage

The report contains interesting details concerning the hoarding of scrap and salvage. On these subjects it says:

"In a number of instances the by-products of the contractors manufacturing material for the Navy have been investigated and instructions given as to the disposition to the best advantage of such scrap as belongs to the Navy. This includes a large quantity of boiler tubes, scrap steel and non-ferrous metals from various ship repair yards and manufacturing plants and wood scrap from airplane plants."

"The salvage of ferrous metal is a highly important function. It places the material in the proper channels of trade to be quickly reworked into finished products. It makes possible the making of reworking contracts by the Navy. It realizes the large money value tied up in scrap at the various navy yards and stations. It prevents congestion in the yards. The Navy has two direct outlets for ferrous scrap. The armor plate plant at South Charleston can use approximately 20 tons per day of low phosphorus scrap in charging box sizes. The plant of the Erie Forge & Steel Co., working on Navy orders, uses per day approximately 55 tons of scrap steel and iron. The requirements at Erie are covered up to Oct. 1, 1918. If by that time the yards are sorting the material in accordance with instructions issued, the plant will afford an outlet for a considerable tonnage of Navy steel and iron scrap."

"Furnaces are being installed at several of the navy yards for making steel castings. These furnaces will melt a large proportion of steel scrap. The scrap

required is worth at the maximum prices \$39 per ton. The estimated quantity of scrap steel to be salvaged by this method at Puget Sound is 200 tons a month or \$94,000 per year. Mare Island is installing similar furnaces and can also be expected to salvage approximately \$94,000 per year by this method. The salvaging of the scrap steel is a small fraction of the saving, as the finished castings are worth from \$100 to \$200 per ton."

The scrap non-ferrous metals from various navy yards are remelted and reused at the producing yard to the greatest extent possible. There is, however, considerable material which cannot be efficiently rehandled at the navy yards. This non-ferrous metal-bearing material is then disposed of in one of three methods: by sale, by reworking contracts or by shipment to the smelting plant at the Portsmouth Navy Yard.

Cost-Plus Contracts

Another feature of the report deals with "Cost-Plus Contracts" and "Cost Determination." On this it says:

"The situation as regards wages, cost of materials and financing of additional plant capacity has, of course, been such as to make it necessary for many manufacturers to ask for cost-plus contracts; on the other hand, the Navy, in order to avoid the necessity of allowing manufacturers a wide margin for contingencies, has found in many cases that its interests required either a cost-plus contract with a continuous and careful inspection of costs thereunder or special investigations of bids and estimates whereby a fair fixed price contract could be entered into or a fair final price awarded under Navy commandeering orders for manufacture."

"The general weakness of the cost-plus contract from the standpoint of the Government is, of course, the tendency toward lack of interest or effectiveness on the part of the manufacturer in keeping costs down. As a partial offset to this the profit under the contract has, wherever practicable, been made a lump sum instead of a percentage of cost."

Chicago Pneumatic to Have Another Subsidiary

The Chicago Pneumatic Tool Co. of California is to be incorporated to take over the scattered agencies formerly conducted by the Chicago company on the Pacific Coast and unite them under one local management, with headquarters at 175 First Street, San Francisco. Branches will be established immediately at Los Angeles, Portland, Seattle and Phoenix. B. H. Tripp, formerly manager of the Philadelphia office of the company, is in charge of the Pacific Coast business, and will doubtless be president of the local corporation. W. P. Pressinger, vice-president and general sales manager of the Chicago Pneumatic Tool Co., is now making a general survey of the Pacific Coast branches in company with Mr. Tripp.

Canadian Chrome Ore Production

A report on Canadian chrome mining by Consul Felix S. S. Johnson, Kingston, Ontario, says that its production is confined to the vicinity of Black Lake and Coleraine in Megantic County, Quebec. From 1910 to 1914 no chrome whatever was mined. In 1915 the output was 12,341 tons, valued at \$179,543, or \$14.55 per ton. In 1916 the production was doubled, reaching 27,517 tons, but with a lower average price—\$11.32 per ton. In recent months greater encouragement has been given to producers by offering higher prices for the ore. Ores of all grades have been mined, from as low as 10 per cent to small quantities of rich ore that run as high as 52 and 54 per cent. In Quebec ores ranging from 10.50 to 16.30 per cent have been raised by concentration to an average of over 50 per cent.

The Youngstown Sheet & Tube Co. has suspended operation of No. 1 blast furnace at Hubbard, Trumbull County, Ohio, for relining and repairs. Capacity will be increased 25 tons a day, giving it a daily output of 350 tons.

Iron and Steel Markets

AN OPEN MARKET

Lower Prices on Steel, Two Standards for Pig Iron

New Business Not Large—Steel Committee About to Disband

An open market for steel products has come in the past week, various forms of finished steel having sold at from \$4 to \$6 a ton below the Government maximum prices established for the fourth quarter of the year. This scale of reductions was provided for in the price schedule which the general committee of steel manufacturers took to Washington Dec. 11 for its final conference with the committee of the War Industries Board.

The new prices were not announced at the conference, as the Government representatives had decided beforehand that no discussion of prices would take place. They were given out after the meeting, however, and on the day following a Youngstown company offered to sell No. 28 black sheets at 4.70c., galvanized sheets at 6.05c., plates at 3c., and standard black pipe at 4.20c., representing reductions of \$6, \$4, \$5 and \$6 per net ton respectively. The same lower prices were named later by several other producers.

The reduction in steel bars is \$4, or to 2.70c., while common iron bars which have been \$12 a ton higher than steel are as yet unchanged. Blue annealed sheets are reduced \$7 per net ton, shapes \$5, and light rails \$5. Tin plates are \$7.35 per box, a reduction of 40c.

Billets are reduced \$4, or to \$43.50, while sheet bars are \$47, as against \$51. Standard Bessemer rails are put at \$55, but no price was announced for open-hearth rails. Some sales of spikes have been made at \$3.70 per keg, a reduction of 20c. Wire rods and wire products are left unchanged.

A reduction of \$3 per ton in pig iron, or to \$30 for basic and \$31 for No. 2 foundry, was included in the schedule the steel manufacturers took to Washington. Most merchant pig iron companies have held thus far to the Government prices. In the Cleveland district one producer has sold at the \$3 reduction. In Alabama both the higher and the lower price are quoted, and this is true in markets tributary to Cincinnati.

Among pig-iron producers, those who have chafed under the fixing of pig-iron prices by steel makers, now feel that as the demand for their product is relatively greater than that for finished steel, they will be able to get the old prices. On the other hand, many foundries are well stocked with iron. But Southern furnaces have declined to take on 50,000 tons of basic iron for England and Japan is inquiring for 20,000 tons.

The revision of prices on undelivered portions of contracts—the old issue of a falling market—

is up again with the mills. Some Government efforts in this direction are causing protest, and the question has an unusual aspect in the case of ship plates for yards whose contracts with the Government are on the cost plus basis.

The decision of the steel manufacturers' committee to disband on Dec. 21 is in line with the dissolution of the War Industries Board and signifies the giving over of the market to the free play of competitive factors.

It is to be said that the reduced prices have brought out no large amount of new business. In the East a 6000-ton plate contract was put through at 3c., the new figure, though some producers quoted the Government price. Now that the market is open, the possibility of further reductions is distinctly a factor.

Mill operations are slacking up in some directions and labor supply is increasing. Long-needed repairs to blast furnaces and steel plants will take up some of the surplus. The Steel Corporation's active capacity rating for the week was 93.2 per cent in pig iron and 97.9 per cent in steel ingots, against 94.2 per cent and 96.5 per cent in the previous week.

November records show structural activity at low point for the year, the lowest also in four years, the business taken representing but 27 per cent of the capacity of the fabricating shops.

The British readjustment in iron and steel is complicated by uneasy labor, much higher prices on export than on domestic orders, and the termination with January of Government subsidies of £2 to £8 per ton of steel. American rolling machinery is wanted both for English and French steel works extensions. British and Indian railroads have bought 39,000 cars.

The offering of shell steel as scrap has begun and vast amounts are to come upon the market. Canadian negotiations on a basis equivalent to \$25, Pittsburgh, for heavy melting steel indicate the decline thus far.

Pittsburgh

PITTSBURGH, Dec. 17—(By Wire).

Following the refusal of the War Industries Board to continue Government control of prices after Dec. 31, a number of steel companies announced reductions effective Jan. 1 identical with those recommended at Washington by the General Committee of the American Iron and Steel Institute. The Youngstown Sheet & Tube Co. was the first to act, and on Dec. 12, the day after the Washington conference, announced reductions of \$6 a ton on black sheets, \$4 a ton on galvanized sheets, \$6 a ton on steel pipe, and \$5 a ton on plates, while wire products were left unchanged. Subsidiaries of the United States Steel Corporation announced reductions on all but wire products soon afterward. The reduction on blue annealed sheets, as announced by the American Sheet & Tin Plate Co., and other makers amounts to \$7 a ton, \$1 more than on black sheets. Practically all of the steel companies will adhere to these prices, though there is some question yet as to what action will be taken on bolts, nuts, and rivets and

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

	Dec. 17, 1918	Dec. 10, 1918	Nov. 19, 1918	Dec. 19, 1917
Pig Iron, Per Gross Ton:				
No. 2 X, Philadelphia....	\$39.15	\$39.15	\$39.15	\$34.25
No. 2, Valley furnace....	34.00	34.00	34.00	33.00
No. 2, Southern, Cincinnati	37.60	37.60	37.60	35.90
No. 2, Birmingham, Ala...	34.00	34.00	34.00	33.00
No. 2, furnace, Chicago*	34.00	34.00	34.00	33.00
Basic, deliv., eastern Pa...	36.90	36.90	36.90	33.75
Basic, Valley furnace....	33.00	33.00	33.00	33.00
Bessemer, Pittsburgh....	36.60	36.60	36.60	37.25
Malleable Bess., Chicago*	34.50	34.50	34.50	33.50
Malleable Valley.....	34.50	34.50	34.50	33.50
Gray forge, Pittsburgh....	34.40	34.40	34.40	32.75
L. S. charcoal, Chicago...	38.85	38.85	38.85	37.50

Billets, etc., Per Gross Ton:

Bess. rails, heavy, at mill.	\$55.00	\$55.00	\$55.00	....
O-h. rails, heavy, at mill.	57.00	57.00	57.00	....
Bess. billets, Pittsburgh...	43.50	47.50	47.50	47.50
O-h. billets, Pittsburgh...	43.50	47.50	47.50	47.50
O-h. sheet bars, P'gh....	47.00	51.00	51.00	51.00
Forging billets, base, P'gh.	60.00	60.00	60.00	60.00
O-h. billets, Phila.....	47.50	51.50	51.50	47.50
Wire rods, Pittsburgh....	57.00	57.00	57.00	57.00

Finished Iron and Steel,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Common iron bars, Phila.	3.745	3.745	3.745	3.685
Common iron bars, P'gh.	3.50	3.50	3.50	3.50
Common iron bars, Ch'go.	3.50	3.50	3.50	3.50
Steel bars, Pittsburgh....	2.70	2.90	2.90	2.90
Steel bars, New York....	2.97	3.17	3.17	3.095
Tank plates, Pittsburgh...	3.00	3.25	3.25	3.25
Tank plates, New York....	3.27	3.52	3.52	3.445
Beams, etc., Pittsburgh...	2.80	3.00	3.00	3.00
Beams, etc., New York....	3.07	3.27	3.27	3.195
Skelp, grooved steel, P'gh.	2.70	2.90	2.90	2.90
Skelp, sheared steel, P'gh.	3.00	3.25	3.25	3.25
Skelp hoops, Pittsburgh...	3.30	3.50	3.50	3.50

*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

Sheets, Nails and Wire,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh.	4.70	5.00	5.00	5.00
Sheets, galv., No. 28, P'gh.	6.05	6.25	6.25	6.25
Wire nails, Pittsburgh...	3.50	3.50	3.50	3.50
Cut nails, Pittsburgh....	5.00	5.00	5.00	4.80
Fence wire, base, P'gh....	3.25	3.25	3.25	3.25
Barbed wire, galv., P'gh...	4.35	4.35	4.35	4.35

Old Material, Per Gross Ton:

Carwheels, Chicago	\$27.00	\$27.00	\$29.00	\$31.50
Carwheels, Philadelphia ..	29.00	29.00	29.00	34.00
Heavy steel scrap, P'gh....	25.00	26.00	29.00	30.00
Heavy steel scrap, Phila...	25.00	26.00	28.00	28.00
Heavy steel scrap, Ch'go.	23.00	26.00	29.00	28.50
No. 1 cast, Pittsburgh....	27.00	27.00	29.00	30.00
No. 1 cast, Philadelphia...	29.00	29.00	29.00	31.00
No. 1 cast, Ch'go (net ton)	26.00	26.00	29.25	24.50
No. 1 RR. wrot, Phila....	32.00	34.00	34.00	35.00
No. 1 RR. wrot, Ch'go (net)	25.00	27.00	27.00	31.25

Coke, Connellsville,

Per Net Ton at Oven:

Furnace coke, prompt....	\$6.00	\$6.00	\$6.00	\$6.00
Furnace coke, future....	6.00	6.00	6.00	6.00
Foundry coke, prompt....	7.00	7.00	7.00	7.00
Foundry coke, future....	7.00	7.00	7.00	7.00

Metals,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York....	26.00	26.00	26.00	23.50
Electrolytic copper, N. Y.	26.00	26.00	26.00	23.50
Spelter, St. Louis.....	8.15	8.25	8.15	7.50
Spelter, New York.....	8.50	8.60	8.50	7.75
Lead, St. Louis.....	6.40	6.75	7.75	6.25
Lead, New York.....	6.75	7.05	8.05	6.40
Tin, New York.....	72.00	72.00	75.00	85.50
Antimony (Asiatic), N. Y.	8.00	8.50	8.00	15.00
Tin plate, 100-lb. box, P'gh.	\$7.45	\$7.75	\$7.75	\$7.75

bar iron, none of which was mentioned in the statement of the institute committee.

The most notable exception taken to the recommendations of the institute committee is in the pig iron trade. Producers of iron have not settled on any definite policy and even those sellers who agreed at the informal meeting in New York on Dec. 9 on the advisability of reducing pig iron prices \$3 a ton have not yet committed themselves in quotations to consumers as to the possibility of any reductions. Some blast furnace interests known to be absolutely opposed to any reduction at this time have temporarily withdrawn from the market. In at least two instances reported this week furnaces have declined to consider business for January shipment at less than the present Government maximum prices.

In the steel trade confusion has been caused by what is characterized in some quarters as the premature announcement of price reductions. Many consumers and jobbers have asked for suspensions on shipments, evidently assuming that they are entitled to a revision of prices to the lower basis. Where firm contracts have been placed, steel manufacturers are not disposed to consider price revision. They point to the fact that they made heavy shipments at low prices during 1916 and 1917 when the market was showing a steadily advancing trend, and they are trying to persuade consumers as to the justice of carrying out their obligations at the contract prices. In cases where steel has been bought for resale—jobbers' orders, for example—there may be some exceptions made.

The new prices have not yet brought out any business worth mentioning, which is not surprising to steel companies which anticipate a period of quiet lasting at least two or three months. The opinion voiced by Judge Gary of the Steel Corporation that ultimately there will be a large demand for steel products is fully shared by selling departments of companies in the Pittsburgh district, which exhibit great optimism as to the future.

Pig Iron.—There has been no announcement by any pig iron interests in this district of a reduction in prices to go into effect Jan. 1. As stated in this report last week, there is considerable difference of opinion among merchant pig iron interests as to the necessity or advisability of lowering prices \$3 a ton, which was the recommendation of the general committee of the American Iron and Steel Institute. Even those sellers who informally agreed among themselves that a reduction would be desirable in order to help along the readjustment to normal conditions are in no haste to translate this agreement into action. Some of them appear to be in doubt as to what price they would quote on an inquiry for iron for January shipment, and the probability is that most of them would tell consumers that they are so well sold up as not to be in a position to quote at the present time. In one instance, a furnace has declined an order for December-January shipment, the December price to be the present Government maximum and the January price to be the prevailing market quotation. Another furnace declined to consider an order for January shipment of foundry iron at a reduction of \$3 a ton. Notwithstanding the attitude of the furnaces, some of the pig iron merchants believe that prices will be lowered, and one selling company is so well convinced of this that it will not attempt for the time being to do any merchant business, but will confine its activities to a brokerage basis. Sellers are not overlooking the possibility that some of the steel companies may have steel-making iron to sell in the first quarter of the year, particularly if steel business is not up to the capacity of the blast furnaces connected with steel plants. An easier condition in steel making iron will also be in evidence soon because of the fact that self-contained steel plants, which have been buying iron during the past year or more, will now obtain a sufficient supply and possibly a surplus from their own furnaces. Foundries seem to be fairly well stocked with iron and are turning down propositions made to them by sellers. General opinion among producers and

their representatives is that pig iron prices will continue fairly high during 1919 and that any weakness which may develop, due to a decline in the demand in the first few months of the year, will be counteracted later in the year. It is believed that a good business both for domestic and export shipments will develop not later than the beginning of the second quarter. Cancellations of iron have been practically nil, as the furnaces will not agree to cancellations, and in one instance legal action has resulted from the refusal of a steel company to accept a shipment of iron. Sellers have agreed, however, when requested, to spread out deliveries over longer periods. In the absence of sales we continue to quote prices as established for fourth quarter by the Government.

Basic pig iron, \$33; Bessemer, \$35.20; gray forge, \$33; No. 2 foundry, \$34; No. 3 foundry, \$33.50, and malleable \$34.50, all per gross ton at Valley furnace, the freight rate for delivery in the Cleveland and Pittsburgh district being \$1.40 per ton.

Ferroalloys.—Cancellation of Government steel orders has resulted in decreased output of high carbon and high silicon steel, and steel makers are oversupplied with ferroalloys. Consumers are, of course, accepting shipments on contracts, but with their requirements much decreased they will have stock on hand sufficient to last a long time. There is no demand and consequently no sales. A firm offer would doubtless bring considerable price reductions. As there have been no sales, however, we quote former prices as nominal.

We quote 70 per cent ferromanganese at \$250, delivered, and 16 to 18 per cent spiegeleisen, \$75, f.o.b. furnace, an addition or deduction of \$3.50 per unit being made, when the manganese content is above or below the standard. For delivery over the remainder of the year, and for next year, 50 per cent ferrosilicon is quoted at \$135 to \$140.

We quote 9 per cent Bessemer ferrosilicon at \$55; 10 per cent, \$57; 11 per cent, \$60.30; 12 per cent, \$63.60. We quote 6 per cent silvery iron, \$42; 7 per cent, \$43; 8 per cent, \$45.50; 9 per cent, \$47.50; 10 per cent, \$50. Three dollars per gross ton advance for each 1 per cent silicon for 11 per cent and over. All the above prices are f.o.b. maker's furnace, Jackson or New Straitsville, Ohio, these furnaces having a uniform freight rate of \$2.90 per gross ton, for delivery in the Pittsburgh district.

Billets and Sheet Bars.—There is a better supply of billets, slabs and sheet bars and mills are now in a position to take on considerable new business, but little is being offered. Brokers in semi-finished material say that it is much easier to get supplies than it is to find customers. The supply of Bessemer steel, in particular, is greatly improved and Bessemer sheet bars are now in such supply that the leading sheet interest was able to increase its production last week to 70 per cent. All sellers will quote for delivery after Jan. 1 at \$4 per gross ton below the Government maximum prices which have been in effect throughout the year.

We quote 4 x 4 in. soft Bessemer and open-hearth billets at \$43.50, sheet bars \$47, slabs \$46, forging ingots \$69, and forging billets \$60 base, all f.o.b. at mill, Pittsburgh or Youngstown.

Skelp.—Makers of skelp will now accept orders for delivery after Jan. 1 at a reduction of \$5 per net ton from the Government maximum prices which are in effect until the end of the year. The new prices are 3c. for sheared skelp, 2.70c. for grooved skelp, and 2.90c. for universal skelp, f.o.b. Pittsburgh or Youngstown mill.

Plates.—Leading producers, including the Carnegie Steel Co. and the Jones & Laughlin Steel Co. have announced a reduction in the price of plates to 3c. Pittsburgh effective Jan. 1. There seems to be some question as to whether unfilled orders for plates and other steel for shipbuilding will be reduced to the new basis. In some cases, shipbuilders placed firm orders for plates, although the shipping schedules were prepared by the War Industries Board. Allocations of the War Industries Board were followed by contracts between shipbuilders and the makers and the latter now state that there will be no price revision on these contracts except where a specific agreement was made to that effect at the time of sale. Plates for cars were sold to the car builders to cover in each case a definite number of cars and the plate manufacturers see no reason for revision of price on these orders. The plate situation is very much easier because of decreased tonnages being shipped to shipyards, the December schedule calling

for 40,000 tons less than the November schedule. There is practically no new business and none is expected to develop until after the first of the year.

We quote sheared plates at 3c., Pittsburgh mill, for delivery after Jan. 1.

Structural Material.—A local fabricator received an inquiry this week for 500 tons of fabricated steel for a commercial building, the first inquiry of its kind since the signing of the armistice. However, fabricators are not hopeful that there will be any strong revival of interest in buildings until the price situation has settled. Even on the basis of structural shapes at 2.80c. the price mills are now quoting for delivery after Jan. 1, it is considered doubtful whether builders will decide to go ahead. They may wait in the hope that still lower prices will come before spring.

We quote beams and channels up to 16 in. at 2.80c. at mill, Pittsburgh, for delivery after Jan. 1.

Iron and Steel Bars.—The price of steel bars for delivery after Jan. 1 will be 2.70c., a reduction of \$4 a net ton. While not all the producers have yet formally announced this new price, it is generally admitted that it will be adopted. Meanwhile, business is almost at a standstill, consisting merely of very small lots for prompt shipment. Bar iron rolling mills apparently have not decided what they will do on the question of prices. The reduced price for steel bars and the lower prices for scrap now prevailing will, of course, soon affect the bar iron situation, and a considerable reduction is in prospect.

We quote soft steel bars rolled from billets at 2.70c.; from old steel rails, 2.80c.; common iron bars, 3.50c.; bar iron rolled from selected scrap, 4.25c.; and refined iron bars at 5c. at mill, Pittsburgh. The prices on steel bars apply only on deliveries after January 1, by which time the schedule on bar iron may also be changed.

Sheets.—The Youngstown Sheet & Tube Co. was the first maker of sheets in the Pittsburgh-Youngstown district to announce a reduction in prices effective Jan. 1. Its announcement was made the day following the meeting of the general committee of the American Iron and Steel Institute and the price-fixing committee of the War Industries Board in Washington. The new prices are those recommended to the industry by Judge Gary, chairman of the institute committee, and mean a reduction of \$6 on black sheets and \$4 a ton on galvanized sheets. The reduction in blue annealed, which is not made by the Youngstown Sheet & Tube Co., is \$7. The cost of manufacturing galvanized sheets, particularly the lighter gages, has been proportionately higher than the costs for blue annealed and black sheets, and a proper relation is established by the greater reduction on blue annealed and black. Production of sheets is increasing, the leading interest having attained a rate of 70 per cent last week, but chiefly by using Bessemer steel. Some of the independent mills are working at a still better rate. The leading interest is quoting deliveries of from four to eight weeks on blue annealed, black and galvanized sheets, but is making no promises on specialties. A fair quantity of business in special sheets, particularly automobile, electrical, stove stock and deep drawing and stamping quality, is being offered and is being booked by the independent mills. New differentials on sheets are announced by the American Sheet & Tin Plate Co., as follows, effective Jan. 1:

New prices on sheets effective on all sales for delivery after Jan. 1 are 3.95c. for No. 10 blue annealed, 4.70c. for No. 28 black and 6.05c. for No. 28 galvanized, all f.o.b. Pittsburgh or Youngstown mill.

Spikes.—A leading maker of spikes is quoting for delivery after Jan. 1 at a reduction of \$4 a net ton. This will make the prices as follows:

Standard sizes of railroad spikes 9/16 x 4 1/4 in. and larger, \$3.70 per 100 lb. in lots of 200 kegs of 200 lb. each, or in larger lots. Boat spikes, \$5.05 per 100 lb.; rack bolts, \$4.70 base in lots of 200 kegs or more; less than 200 keg lots, \$1 per 100 lb. extra. All f.o.b. Pittsburgh.

Tin and Terne Plate.—Effective Jan. 1, the price for tin plate per base box of 100 lb., 112 plates 20 x 28 in., will be \$7.35, f.o.b. Pittsburgh. New business in tin plate is not being freely offered for the reason that manufacturers of food containers are well stocked up. Tin plate makers, however, are optimistic as to the future, as they anticipate a large export demand for

food products during the coming year, and they believe that most of the food exported will be packed in cans. Demand for terne plate is small.

Hot-Rolled Strip Steel.—Makers have not yet announced new prices on orders taken for delivery after the first of the year, but it is expected that there will be a reduction of about \$4 a net ton. On this basis, the new price will be 3.30c. base Pittsburgh.

We quote hot-rolled strip steel at \$3.50 per 100 lb., Pittsburgh, for third quarter, 50c. per 100 lb. additional being charged for special stamping quality.

Cold-Rolled Strip Steel.—A reduction of \$5 a net ton in the price of cold-rolled strip steel has been announced by leading makers, making the new price 6.25c. per lb., base Pittsburgh, for 1½-in. and wider, 0.100-in. and thicker, hard temper in coils under 0.20 carbon. The extra charge for boxing has been reduced from 50c. per 100 lb. to 25c.

We quote cold-rolled strip steel at \$6.25 base per 100 lb., Pittsburgh, for 1½-in. and wider, 0.100 in. and thicker, hard temper in coils under 0.20 carbon. Boxing charge 25c. per 100 lb.

Shafting and Screw Stock.—There will be a \$4 per net ton reduction effective Jan. 1, making the basing discount 21 per cent off list, instead of 17 per cent, the discount fixed by the Government. The only new business being offered covers small lots for immediate shipment to finish up work which consumers have under way.

For delivery after Jan. 1, we quote cold-rolled shafting at 21 per cent off list in carloads and 16 per cent in less than carloads, f.o.b. Pittsburgh.

Wire Rods.—Little business is being done at present, but mills are shipping all that they can on old orders. A leading independent wire producer is now working at nearly 100 per cent, but some others are not doing so well. There will be no immediate change in price, none having been recommended by the general committee of the American Iron and Steel Institute in its statement made public last week, but the leading interest is reported to be protecting its customers against price declines on any business placed for forward delivery. Prices are given on page 1551.

Wire Products.—Owing to high costs of production, and the fact, as asserted by producers, that there has been little or no profit in wire products, particularly wire nails, no change in prices was recommended by the general committee of the American Iron and Steel Institute in the schedule which it had in readiness to present to the price-fixing committee of the War Industries Board in Washington on Dec. 11. Therefore, wire producers will adhere to the present prices, at least until costs of production are decreased. The hardware trade is buying very cautiously. Prices are given on page 1551.

Bolts, Nuts and Rivets.—Had the war continued it was the intention of makers of bolts, nuts and rivets to ask the War Industries Board for an advance in prices effective Jan. 1. Therefore, the present attitude of makers is that the benefit they derive from the \$4 reduction in steel bars is no more than they are entitled to. They claim that their costs have increased 50 per cent during the period of Government control. Prices are given on page 1551.

Hoops and Bands.—In line with the \$4 per net ton reduction in steel bars there will be an equivalent reduction on hoops, bands and strips, effective Jan. 1. The new price will be 3.30c. base.

Wrought Pipe.—A new list of discounts on wrought steel pipe was announced Dec. 12 by the Youngstown Sheet & Tube Co. All discounts are advanced three points, equivalent to a reduction of \$6 a ton on standard black pipe and oil country goods, both butt-weld and lap-weld, effective on shipments on and after Jan. 1. The National Tube Co. has notified all of its district sales offices that they may advise customers that it will quote the same prices, but its formal announcements will not be sent to the trade until next week. Other makers will take similar action. There have been numerous suspensions of orders by jobbers, and in most instances these are being accepted, but orders placed by contractors for buildings or other work, wherein

the present Government prices formed the basis for the contract price of the work, will not be canceled, pipe makers state. These were placed as firm orders and bear no cancellation privilege. Discounts on iron pipe have also been advanced three points, thus reducing the price \$6 per ton. Discounts on wrought iron and steel pipe are given on page 1551. Discounts for less than carload lots to jobbers will be changed Jan. 1, but new differentials have not yet been decided upon.

Boiler Tubes.—Discounts on welded boiler tubes will be changed by leading makers Jan. 1, which will be equivalent to a reduction of \$6 a ton. The National Tube Co. will send out a new discount card next week and it is expected that all other makers will follow suit. An equivalent reduction will be made in seamless steel tubing. It is stated by makers that there will be no revision of prices on unfilled orders. Such orders have been placed by boiler manufacturers at the present Government prices, and the latter prices formed the basis for bids which boiler makers made the Emergency Fleet Corporation and the Railroad Administration. All new business entered for delivery after the first of the year will be at the reduced prices. Discounts are given on page 1551.

Coke.—Neither coke sellers nor consumers seem to know what the attitude of the Fuel Administration will be as to prices after Dec. 31. The supply of blast furnace coke is somewhat easier but the market is being combed for spot supplies. Foundry coke is fairly easy and consumers seem to be getting all that they require. The Connellsville *Courier* reports an increase of 26,000 tons in the output of the region during the week ended Dec. 7 as compared with the previous week.

We quote 48 hr. beehive blast furnace coke at \$6; 72 hr. beehive foundry coke at \$7 and crushed coke over ¾ in. at \$7.30, all in tons of 2000 lb. at oven. We quote by-product coke at \$5.70 for run of ovens and \$6.70 for selected foundry in all States but Alabama and Washington. To these base prices should be added the freight rate from the competing beehive coke district which takes the lowest freight rates to the point where such by-product coke is produced, except that there shall be added for coke manufactured in New England 7c. for each 5c. above 60c. in the freight charges per ton (2240 lb.) of coal for water transportation on the coal used in the manufacture of such coke.

Old Material.—Consumers continue to stay out of the market and even trading among dealers is at a minimum because most of them have bought all the scrap that they will need for delivery on contracts expiring Dec. 31. A steel company in this district bought heavy breakable cast scrap at \$25 and machine shop turnings at \$14 last week, but tonnages were small. Shell steel of heavy melting quality has been offered in Canada at a price which would make its delivered cost in the Pittsburgh district \$25 a ton. We therefore change our quotation on heavy melting steel to that figure. Other prices remain as quoted last week largely the views of dealers as to prices at which they would be willing to sell.

Heavy steel melting, Steubenville, Follansbee, Brackenridge, Monessen, Midland and Pittsburgh, delivered..	\$25.00 to \$26.00
No. 1 cast, for steel plants (nominal)	27.00 to 28.00
Rerolling rails, Newark and Cambridge, Ohio, Cumberland, Md., Franklin, Pa., and Pittsburgh (nominal)	32.00
Compressed steel	24.00 to 25.00
Bundled sheet, sides and ends, f.o.b. consumers' mills, Pittsburgh district (nominal)	22.00 to 23.50
Bundled sheet stamping (nominal)	21.00 to 22.00
No. 1 busheling (nominal)	26.00 to 27.00
Railroad grate bars (nominal)	25.00
Low phosphorus melting stock (guaranteed)	29.00
Low phosphorus melting stock (bloom and billet ends, heavy plates)	32.00
Iron car axles (nominal)	35.00
Locomotive axles, steel (nominal)	35.00
Steel car axles (nominal)	35.00
Railroad malleable (nominal)	31.00 to 32.00
Machine shop turnings	17.50 to 18.00
Cast iron wheels	28.00 to 28.50
Rolled steel wheels (nominal)	33.00
Sheet bar crop ends (at origin) (nominal)	35.00
Heavy steel axle turnings (nominal)	19.00
Heavy breakable cast	26.00 to 27.00
Cast iron borings	17.50 to 18.00
No. 1 railroad wrought	30.00 to 32.00

Chicago

CHICAGO, Dec. 16—(By Wire).

While official maximum prices are technically effective until the end of the year, it is certain that little, if any, steel will be purchased at these levels, and it is as certain that when business is done it will be at or under the levels of the tentative schedule suggested by Judge Gary at Washington. The leading local interest has announced to its offices that the new prices will be effective for the first half, and the leading independent has followed. These prices are to apply on new business, and the validity of contracts is to be generally considered unimpaired. In at least one quarter, however, and that a most important one, there is a reservation in the interest of buyers. A consumer whose contract with a customer is based on the present maximum prices will be rigidly held to his steel contract which specifies those prices, and it is not intended to help the buyer who had failed to purchase into 1919 to gain advantages over his competitor who bought ahead.

The pig iron trade does not appear to have settled its price problem. For the moment and until Dec. 31, fourth quarter official maximums are called the market, but none doubt that lower prices will come. It is understood that the producers are awaiting a suggestion from Chairman H. G. Dalton of the Pig Iron Committee of the American Iron and Steel Institute, as to equitable differentials to accompany the suggested lower price of \$31 for foundry iron.

Some of the Southern producers are averse to any price reduction at all. While cleaning up orders and contracts, they are inclined to await developments. To cope with Northern No. 2 foundry at \$31.50, they must drop from \$39, Chicago, the freight from Birmingham being \$5; on the other hand, the large Southern producer associated with the leading interest will conform with the suggested price schedule for the first half, and inasmuch as it is in a position to take business, it may be a determining factor.

Meanwhile business of all kinds is quiet. Many export inquiries are received, but the bulk does not develop as freely as was expected. From the South comes word that the British are anxious to have reinstated basic contracts which they ordered suspended. In general, neither producers nor consumers have fully found themselves.

Ferroalloys.—No business being done, there is nothing to test the market, and in carrying the quotations of last week it is understood they are nominal.

We quote 70 per cent ferromanganese nominal at \$250, delivered; 50 per cent ferrosilicon at \$155 to \$162.50, delivered, and 16 to 18 per cent spiegeleisen at \$70, furnace.

Plates.—Inquiry for plates is more definite than for other products. The mills are comfortably filled for the present, and some will take no business for delivery after Jan. 1 on the new price basis of 3c. Pittsburgh, or 3.27c. Chicago. Jobbers say there is no change in their prices for material out of store.

The mill quotation is 3c., Pittsburgh, the freight to Chicago being 27c. per 100 lb. Jobbers who have stock quote 4.52c.

Pig Iron.—Business is at a standstill. While the Government maximum will stand to the end of the year, there is no unanimity of opinion as to what will be quoted from Jan. 1. Several interests are awaiting light on differentials as it is assumed these will be changed to accord with a new base. A Northern interest states that its policy for next year has not been settled, while another interest associated with the Steel Corporation will accept business after Jan. 1 on the base price of \$31 for foundry as proposed by Judge Gary. If some of the big Southern producers cut prices, they will do so most unwillingly. Their present attitude is to clean up orders and contracts so far as possible, then sit back and wait. Meanwhile, all producers adhere to their stand against the acceptance of cancellations. They believe there will be no wholesale reduction of price, also that no rush to buy is immediately in prospect. The British canceled a large tonnage of basic, but are trying to have the orders

reinstated. Some fair sized inquiries from Japan and Chile have appeared. Three carloads of silvery were snapped up quickly to-day at the full maximum price. It is asserted that contracts will be considered valid by the producers, even though deliveries are overdue, inasmuch as the delays were due to no fault of theirs. Summed up, the price situation is that the trade is waiting to see the market for the first half broken. So far, not enough resale iron has come out to be a real factor.

The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable and steel-making irons, including low phosphorus, which are f.o.b. furnace, and do not include a switching charge averaging 50c. per ton:

Lake Superior charcoal, Nos. 2 to 5...	\$38.70 to \$39.00
Lake Superior charcoal, C to AA...	40.70 to 42.50
Lake Superior charcoal, No. 6...	41.20 to 41.50
Northern coke foundry, No. 1, silicon, 2.25 to 2.75	35.25
Northern coke foundry, No. 2 silicon, 1.75 to 2.25	34.00
Northern high-phosphorus foundry	34.00
Southern coke, No. 1 foundry and No. 1 soft silicon, 2.75 to 3.25	42.00
Southern coke, No. 2 foundry, silicon, 2.25 to 2.75	40.25
Southern foundry, silicon, 1.75 to 2.25	39.00
Malleable, not over 2.25 silicon	34.50
Basic	33.00
Low phosphorus (copper free)	54.00
Silvery, 7 per cent	50.00

Structural Material.—In the past week the leading independent was ordered to cease rolling shell steel, which leaves a part of its capacity available for structural rollings when demand justifies this. At present shapes are quiet. No lettings are announced this week. After Jan. 1, deliveries can be had at 2.80c., plus the freight from Pittsburgh, 27c. per 100 lb.

The mill quotation is 2.80c., Pittsburgh, which takes a freight rate of 27c. per 100 lb. for Chicago delivery. Jobbers quote 4.27c. for material out of warehouse.

Rails and Track Supplies.—While the prices heretofore mentioned for standard rails, \$55 for Bessemer and \$57 for open-hearth, were specified as those to be paid by the War and Navy departments, those prices will also be asked of the railroads. The latter are not buying. Under the reduced price schedule, railroad spikes and track bolts will be quoted 20 points lower by one interest.

Standard railroad spikes, 3.90c., Pittsburgh. Track bolts, with square nuts, 4.90c., Pittsburgh. Tie plates, steel, 3.25c.; tie plates, iron, 3.75c., f.o.b. maker's mills. The base for light rails is 3c., f.o.b. maker's mill, for 25 to 45-lb. sections, lighter sections taking Government extras.

Wire Products.—The demand is surprisingly good, considering the rate at which production has been going and the recent uncertainty as to prices. Many jobbers' stocks are so low they must buy. In the prices announced for the first half, wire nails show no change.

Cast Iron Pipe.—There is no business pending or prospective to report, and new prices have not been announced.

We quote per net ton, f.o.b. Chicago, ex-war tax, as follows: Water pipe, 4-in., \$69.80; 6-in. and larger, \$68.80; class A and gas pipe, \$1 extra.

Sheets.—This product is in somewhat better demand, but consumers are nervous and the market must settle. The mills will accept the proposed reductions for next year deliveries, which will make No. 28 black sheets 4.70c., No. 10 blue annealed, 3.95c., and No. 28 galvanized 6.05c., Pittsburgh. Jobbers' prices are unchanged.

Chicago delivery out of stock regardless of quantity, No. 10 blue annealed, 5.52c.; No. 28 black, 6.52c., and No. 28 galvanized, 7.77c.

Bolts and Nuts.—It can be said that within a few days a new schedule of prices will be effective. Meanwhile, business is very quiet. Jobbers report no change, and quote as follows:

Structural rivets, 5.67c.; boiler rivets, 5.77c.; machine bolts up to $\frac{3}{4}$ x 4 in., 37½ per cent off; larger sizes 25 and 20 off; carriage bolts up to $\frac{3}{4}$ x 6 in., 32½ off; larger sizes, 20 off; box pressed nuts, square, tapped, 78c. off; hexagon tapped, 58c. off; coach or lag screws, gimlet points, square heads, 40 per cent off. Quantity extras for nuts are canceled.

Bars.—The makers of bar iron who are comfortably filled with orders which will engage their capacity over the next few weeks say their price of 3.50c. is good for the remainder of the year, and they are as yet undetermined what will be quoted later. Reinforcing bars are showing more activity. Discard steel bars will soon cease to be a factor. Rail carbon bars are still quoted at 3c., this being justified by the high cost of re-rollers in stock. Steel bars are quoted technically at 2.90c. until the end of December. Delivery after that can be had at 2.70c., Pittsburgh, taking freight of 27c. per 100 lb. Jobbers' prices are unchanged.

Mill prices are: Mild steel bars, 2.70c., Pittsburgh, taking a freight rate of 27c. per 100 lb.; discard bars, 3.05c., Chicago; common bar iron, 3.50c., Chicago; refined iron bars, 4.25c. to 5c.; rail carbon, 3c., Chicago.

Jobbers quote soft steel bars, 4.17c., bar iron, 4.17c., for $\frac{1}{4}$ in thick and heavier. Reinforcing bars, 4.29 $\frac{1}{2}$ c. base. Under the new price there is no charge for twisting, but extras for sizes are quoted as per card. Shafting, list plus 13 per cent.

Old Material.—Consumers are out of the market and buy only when some exceptional bargain is offered. The Sub-Committee on Scrap Iron and Steel has sent a letter to dealers saying that contracts for deliveries after Jan. 1 should be adhered to by all concerns. Quotations are still in a nebulous state.

We quote for delivery in buyers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Iron rails	\$35.00 to \$36.00
Relaying rails	50.00 to 55.00
Carwheels	27.00 to 28.00
Steel rails, rerolling	28.00 to 29.00
Steel rails, less than 5 ft.	30.00 to 31.00
Heavy melting steel	23.00 to 24.00
Frogs, switches and guards, cut apart ..	23.00 to 24.00
Shoveling steel	23.00 to 24.00
Heavy steel axle turnings	19.00 to 20.00

Per Net Ton

Iron angles and splice bars	\$33.00 to \$34.00
Steel angle bars	24.00 to 25.00
Iron arch bars and transoms	36.50 to 37.00
Iron car axles	31.00 to 32.00
Steel car axles	36.00 to 37.00
No. 1 railroad wrought	25.00 to 26.00
No. 2 railroad wrought	22.00 to 23.00
Cut forge	23.00 to 24.00
Pipes and flues	19.00 to 20.00
No. 1 busheling	21.00 to 22.00
No. 2 busheling	14.00 to 15.00
Steel knuckles and couplers	29.00 to 29.50
Coil springs	27.00 to 28.00
No. 1 cast	26.00 to 27.00
Boiler punchings	30.00 to 31.00
Locomotive tires, smooth	32.00 to 33.00
Machine-shop turnings	11.00 to 12.00
Cast borings	13.50 to 14.50
Stove plate and light cast	19.00 to 19.50
Grate bars	19.00 to 19.50
Brake shoes	19.00 to 19.50
Railroad malleable	23.00 to 24.00
Agricultural malleable	23.00 to 24.00
Country mixed	16.00 to 17.00

Philadelphia

PHILADELPHIA, Dec. 17.

The new price schedule has not been received with any enthusiasm by the manufacturers in the Philadelphia district. This is due largely to the feeling of pig iron manufacturers that there is no real demand for reduction in prices at the present time or justification for it, and also because the city is a stronghold of companies not fully integrated which are compelled to buy pig iron or other materials and have not favored reductions in pig iron or finished materials. It is true, however, that one large company which is integrated has not yet recognized the new schedule, and states that it will not do so until it is more in need of business than it is at the present time. A leading plate manufacturer is standing firmly for the old schedule, and states that it has no expectation of reducing the price of plates. Other companies not fully integrated will adopt the new schedule, at least so far as the larger buyers are concerned, but insist they will not sell beyond the first quarter of next year. An important question has arisen as to what prices will prevail on tonnages undelivered Jan. 1, 1919, which were bought at maximum Government prices. The prevailing opinion is that on the large volume of business placed by the Government there will be no

revision of contracts, and as the volume of commercial business placed has not been large for many months, there probably will not be serious difficulty in regard to this matter. It is probable that on tonnages taken by manufacturers or jobbers for stock, prices on undelivered tonnages will be revised Jan. 1 in harmony with the new schedule by most sellers, but some will refuse to do so. Up to the present time, buyers of finished materials are showing no more interest in the market than they did before the new schedule was promulgated, and very little business is being done.

Iron Ore.—A meeting of miners of manganese ore and chrome ore was held at Washington yesterday with officials of the Government in an effort to have some policy adopted which will prevent American mines from sustaining heavy losses due to extensive development operations undertaken from patriotic motives. One company has expended about \$1,000,000 at Butte, Mont., in the development of manganese ore properties, and there have been numerous developments in different parts of the country at heavy expense. The manganese ore market recently has declined to 80c. per unit, compared with the last previous price of \$1.12, and with as high as \$1.40, paid for some tonnages during the war. Under the new Minerals Act, the President has the power to stop the importing of these ores into this country, and it is probable that importing will be at least limited in order to protect American companies. An interesting question involved is as to what will be done regarding the importing from Cuba, where American citizens have made large expenditures in order to help the Government in time of war.

Pig Iron.—Licenses have been issued for the shipment of about 60,000 tons of various grades to Japan, and sales of a considerable tonnage, including 1,500 tons of foundry to-day, have been made at Government prices, but much difficulty is being experienced in obtaining vessel capacity. It is hoped, however, that the vessel situation will soon improve, and enable the iron to move freely to Japan and other foreign countries. Not a single company has adopted the new price schedule, and, while it is likely that there will be reductions in quotations on or about Jan. 1, pig iron producers are disposed to be slow about taking action, and are waiting developments. They are declining to cancel and will not do so unless excellent reasons are given by the buyers. The question as to what basing system will prevail after Jan. 1 is being discussed, but no decision has been reached. Competitive conditions will probably decide this matter. We quote standard grades of iron for delivery in Philadelphia, except low phosphorus grades, for which f.o.b. furnace prices are quoted:

Eastern Pennsylvania No. 1 X	\$40.90
Eastern Pennsylvania, No. 2 foundry	37.90
Virginia No. 2 X	41.75
Virginia No. 2 foundry	40.50
Basic	36.90
Gray forge	36.90
Standard low phosphorus (f.o.b. furnace) ..	54.00
Low phosphorus (copper bearing, f.o.b. furnace) ..	51.00

Ferroalloys.—No sales are reported for the past week. The last made was \$240 for ferromanganese. The weakness of the manganese ore market will doubtless be reflected in the ferroalloys market, but manufacturers are making a determined stand to maintain prices. We quote 70 per cent ferromanganese at \$240 delivered and 16 to 18 per cent spiegeleisen at \$62 f.o.b. furnace.

Coke.—Much interest is manifested as to what the Fuel Administration will do in regard to coke prices. The scarcity of this product continues, and some furnaces have an inadequate supply. If pig iron is to be reduced, it is probable that coke prices will also be marked down, but many believe that if the Government were to cease taking any action, prices would advance.

Finished Material.—The announcement of the decision of the New York meeting to reduce prices on leading finished products has not stimulated business, and no orders of consequence are being placed. Mills are adopting various policies as to quotations, and, naturally, buyers are not disposed to come into the market except to get information. The new schedule

will probably prevail as to most sellers after Jan. 1. Negotiations in regard to the delivery of a large tonnage of plates sold to Japan more than a year ago at from 5 to 10c. per lb. are still pending. The buyers who placed their orders at from 5 to 6c. are, as a rule, taking their tonnages, but those who paid 10c. are endeavoring to have prices revised. Inquiry for various products continues to come from exporting houses, but little business is developing.

Bar Iron.—Bar iron manufacturers have decided not to reduce prices at present, and are quoting 5c. for best refined, 4.25c. for refined and 3.50c. for common bar iron.

Old Material.—The market continues to recede, as some scrap sold at low prices is being delivered, including tonnages of heavy steel taken a long time ago, at \$20. Mills are showing no interest and are not expected to buy to any large extent prior to Feb. 1. We quote for delivery in Philadelphia and nearby points as follows:

No. 1 heavy melting steel.....	\$25.00 to \$26.00
Steel rails, rerolling.....	32.00 to 34.00
No. 1 low phosphorus, heavy, 0.04 and under.....	35.00 to 37.00
Low phosphorus, 0.04 and under....	32.00 to 35.00
Low phosphorus, 0.06 and under....	27.00 to 28.00
Iron rails.....	35.00
Carwheels.....	29.00
No. 1 railroad wrought.....	32.00 to 33.00
No. 1 yard wrought.....	30.00 to 31.00
Country yard wrought.....	28.00 to 29.00
No. 1 forge fire.....	24.00 to 25.00
Bundled skeleton.....	24.00 to 25.00
No. 1 busheling.....	29.00 to 30.00
No. 2 busheling.....	18.00 to 19.00
Turnings (for blast furnace use)....	16.00 to 17.00
Machine-shop turnings (for rolling mill use) ..	17.00
Cast borings (for blast furnace use) ..	16.00 to 17.00
Cast borings (clean).....	18.00
No. 1 cast (for steel plant use).....	29.00
No. 1 cast (cupola sizes).....	32.50 to 33.50
Grate bars.....	24.50 to 25.00
Stove plate.....	24.50 to 25.00
Railroad malleable (for steel plants).....	29.00
Railroad malleable (for malleable works).....	32.50 to 33.50
Wrought iron and soft steel pipes and tubes (new specifications).....	29.00 to 30.00
Ungraded pipe.....	22.00

Birmingham

BIRMINGHAM, ALA., Dec. 17—(By Wire).—The leading interest, which makes both steel and iron, has accepted the reduced scale of prices for steel and pig iron. It has been out of the iron market for some time, but announces that in case it made sales of iron for 1919 delivery, the price would be \$31. The leading foundry iron interest says \$34 is its 1919 price. No exclusively merchant iron interest has yet accepted the reduction. Alabama independent steel interests are quoting the reduced steel price schedule.

Pig Iron.—Birmingham makers continue to look forward rather to higher than lower prices, with a general inclination to expect a continuance of the present level through the first half of the year. The general view is well-expressed by one of the largest foundry-iron makers, who says: "Present prices bid fair to remain throughout the first half. There is sufficient in the foreign demand and the domestic, in view of the low stocks, to more than care for cancellations that may be made incident to the withdrawal of war orders. So far as cancellations are concerned, we have nothing to do. We regard our allocated contracts as we would any others. The supposition in some quarters that the proposed scale, under which iron is reduced \$3 per ton, shall prevail, does not concern us." This authority turned to his files and showed a telegraphic order for 1000 tons for European delivery at \$34.75, which is 75c. above the Birmingham market. The largest foundry-iron producer is sold through the first half on regular business and allocations. Another concern under present operating capacity is booked through five months of 1919. A third says its order books will hold very little more first half iron. A fourth says its first quarter capacity is more than taken up. These conditions and the absence of stocks, together with the foreign demand, predispose the producers to regard price-

fixing withdrawal with equanimity. The orders for Japan recently booked total several thousand tons and it is understood that ship room is freely offered at northern and southern Atlantic and Gulf ports. One interest alone says the \$3 cut will be made, but no sales at that figure are announced. Announcement of withdrawal of price fixation came too late in the week to establish any general study of the effect. Furnace practice has to an extent improved and bids fair to become better and better with the return of the sellers and greater anxiety on the part of those now at work to retain their positions through efficiency. We quote, per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry and soft.....	\$34.00
Basic.....	33.00

Cast-Iron Pipe.—The cast pipe trade remains in its waiting condition, with Government work withdrawn and the merchant trade not having resumed. Several sanitary pipe shops will close down this week for the holidays and will probably not resume until Jan. 1, owing to the state of trade.

Coal and Coke.—The coal output increased 60,000 tons the past week, the output being 382,000 tons, compared with 322,000 tons the preceding week, the low production being credited to influenza. Disposition to put in greater time seems to be increasing. The furnace coke supply is better than it has been, but there is much room for improvement.

Old Material.—There is more current business in the scrap market than in some time, dealers having accepted the apparently inevitable lower prices. But the volume of business is not large and prices are still weak. We quote, per gross ton, f.o.b. Birmingham district yards, as follows:

Old steel axes.....	\$33.00 to \$37.00
Old steel rails.....	22.00 to 23.00
Heavy melting steel.....	20.00 to 21.00
No. 1 railroad wrought.....	25.00 to 26.00
No. 1 cast.....	24.00 to 25.00
Old carwheels.....	23.00 to 23.50
Tram carwheels.....	22.00 to 23.00
Machine-shop turnings.....	11.00 to 11.50
Cast-iron borings.....	11.00 to 11.50
Stove plate.....	19.00 to 19.50

Buffalo

BUFFALO, Dec. 16.

Pig Iron.—The market is quiet at present because neither producers nor consumers are anxious to force the issue as to prices for next year. Many furnaces are pretty well sold up into the latter part of the first half and are not inclined to commit themselves to any statement as to a reduction in prices, and consumers seemingly have declared an armistice on new buying, awaiting development as to the possibility of reductions in prices becoming general. Furnaces are holding firmly to the fixed Government schedule on old contracts and existing allocations and are asking the same schedule on the small tonnages taken for current delivery, but it is expected that new prices will prevail on new business when Government control goes off the first of the year. Sellers are limiting the sales that they do make for next year (which are few at present) to first half and are not taking on any third quarter commitments. Current production and delivery is close to maximum capacity, although coke supplies are not coming in as freely as might be wished. Such supplies are fairly good, however, and furnacemen are hopeful of improvement in that respect. It is understood that the prospective price reduction in pig iron is likely to cause the closing down of the Troy furnace operated by a Buffalo interest as cost of production at that point will not permit of profitable operation. We quote the current Government schedule, f.o.b. furnace, Buffalo, as follows:

No. 1 foundry, 2.75 to 3.25 silicon.....	\$37.00
No. 2 X, 2.25 to 2.75 silicon.....	35.25
No. 3 foundry, 1.75 to 2.25 silicon.....	34.00
Gray forge.....	33.00
Malleable, silicon not over 2.25.....	34.50
Basic.....	33.00
Bessemer.....	35.20
Lake Superior charcoal, regular grades, f.o.b. Buffalo.....	38.50

Finished Iron and Steel.—The item of greatest interest during the week is the announcement of lower prices to become effective Jan. 1 on new business to be shipped after that date. Reports from mills and principal sales agencies in this territory show that they are taking the stand that tonnages already booked will be shipped at the prices at which orders were entered and new prices will apply only to new business for shipment after Jan. 1. Some new business has already found its way onto mill books at the new prices; but as a rule buyers are waiting until after the inventory period and the holiday season before stocking up heavily. It is understood that the new prices do not apply to export trade. Prices for wire, wire rods and nails will continue at the present Government fixed schedule, and local producers and agencies are so quoting. The plate mill of the Donner Steel Co., which has been down for repairs, resumed rollings to-day and will be busy for some time catching up on accumulated orders.

Old Material.—The week has shown practically no transactions in scrap materials, and very little activity is expected for some time to come as the inventory period at consumers' plants will be apt to act as a bar to the taking on of additional stocks in the present state of the market. The price of practically every commodity on the list has dropped about \$2 per ton, and users apparently figure on some further recession. The only scrap moving now is that going forward on unfilled contracts and such material as has to be moved to save unloading or rehandling. The general opinion among dealers is that there will not be much movement in the way of new business until about Feb. 1. No shell scrap is now being produced to speak of, and without that a large proportion of the turnings production is eliminated, and dealers' stocks in that and other lines are becoming small. We quote the present market, which is largely nominal, at the following schedule per gross ton f.o.b. Buffalo:

Heavy melting steel, regular grades.	\$25.00 to \$26.00
Low phosphorus, 0.04 and under.	32.00 to 33.00
No. 1 railroad wrought.	29.00 to 30.00
No. 1 machinery cast scrap.	30.00 to 31.00
Iron axles	40.00 to 41.00
Steel axles	40.00 to 41.00
Carwheels	27.00 to 28.00
Railroad malleable	30.00 to 31.00
Machine shop turnings	16.00 to 17.00
Heavy axle turnings	21.00 to 22.00
Clean cast borings	17.00 to 18.00
Iron rails	31.00 to 32.00
Locomotive grate bars	23.00 to 24.00
Stove plate	25.00 to 26.00
Wrought pipe	23.00 to 24.00
No. 1 busheling scrap.	23.00 to 24.00
Bundled sheet stamping scrap.	21.00 to 22.00

St. Louis

ST. LOUIS, Dec. 16.

Pig Iron.—Both buyers and sellers, save for unimportant odd lots, are keeping out of the market, awaiting the next turn of events before committing themselves on prices or contracts. The decision at Washington to eliminate regulation of prices, allocation of material, etc., at the close of the present month leads buyers to look for lower prices, and furnace representatives have not been given any encouragement by their principals to make any offers.

Coke.—No business appeared in coke during the week, there being practically no needs of consumers to be filled and no offerings of moment from either beehive or by-product plants.

Finished Iron and Steel.—Mill representatives report their plants so well filled ahead as to leave them no reason for pressing for business, while buyers are inclined to look for reductions and so are disinclined to make contracts, with the result that the market has been at a standstill. The warehouses are catching up on deliveries of material ordered before the armistice was signed and report a reduction in immediate business due to the disposition to await developments.

Old Material.—The market stands about where it did at last report, so far as actual business is concerned, with dealers, small and large, unable to put through

any transactions or even to make deliveries in many instances, as orders are being issued to defer deliveries, embargoes are being put on and other steps taken to stop movement until the situation can be reviewed and analyzed.

Per Gross Ton	
Old iron rails.	\$32.00 to \$32.50
Old steel rails, rerolling.	27.00 to 27.50
Old steel rails, less than 3 ft.	26.00 to 26.50
Relaying rails, standard sections, subject to inspection.	45.00 to 50.00
Old carwheels	28.50 to 29.00
No. 1 railroad heavy melting steel.	24.00 to 24.50
Heavy shoveling steel.	23.00 to 23.50
Ordinary shoveling steel.	21.00 to 21.50
Frogs, switches and guards, cut apart	24.50 to 25.00
Ordinary bundled sheet scrap.	15.00 to 15.50
Heavy axle and tire turnings.	15.00 to 15.50
Per Net Ton	
Iron angle bars.	\$26.00 to \$26.50
Steel angle bars.	23.00 to 23.50
Iron car axles	35.00 to 35.50
Steel car axles	33.00 to 33.50
Wrought arch bars and transoms.	35.00 to 35.50
No. 1 railroad wrought.	25.00 to 25.50
No. 2 railroad wrought.	24.00 to 24.50
Railroad springs	23.00 to 23.50
Steel couplers and knuckles.	23.00 to 23.50
Locomotive tires, 42 in. and over, smooth inside	23.50 to 24.00
No. 1 dealers' forge.	16.00 to 16.50
Cast iron borings.	13.50 to 14.00
No. 1 busheling	22.50 to 23.00
No. 1 boilers cut to sheets and rings.	15.00 to 15.50
No. 1 cast.	21.00 to 21.50
Stove plate and light cast.	15.50 to 16.00
Railroad malleable	20.00 to 20.50
Agricultural malleable	16.00 to 16.50
Pipes and flues.	17.50 to 18.00
Heavy railroad sheet and tank.	16.00 to 16.50
Railroad grate bars.	12.00 to 12.50
Machine shop turnings.	12.00 to 12.50
Country mixed	16.00 to 16.50
Uncut railroad mixed.	14.00 to 14.50
Horseshoes	23.00 to 23.50

British Steel Market

Labor Restive and Scarce—General Sentiment Unsettled—Rail Buying (By cable)

LONDON, ENGLAND, Dec. 18.

Prices are regarded as too high to bring out heavy bookings and the general feeling is an unsettled one, with labor very restive and scarce. Steel makers are of the opinion that domestic prices must advance as control is gradually removed. Moderate buying of rails is reported from domestic sources and from India. Following are the revised official domestic prices for steel applicable after Feb. 1, 1919, per gross ton, net f.o.b. makers' works:

Ship, bridge and tank plates, f14 [f11 10s.]*	
Boiler plates, f15 [f12 10s.].	
Ship, bridge and tank plates, thin, f16 [f14 10s. to f17 10s.].	
Angles and bulb angles, f13 12s. 6d. [f11 2s. 6d.]	
Small angles, tees and flats, f16 10s. [f14 to f16].	
Beams, f13 12s. 6d. [f11 2s. 6d.].	
Rails, 60 lb. per yd. and upward, f13 7s. 6d. [f10 17s. 6d.].	
Rounds, squares and hexagons, f14 5s. [f12 10s. to f13].	
Small rounds, squares and hexagons, f16 10s. [f15 to f15 10s.].	
Blooms, billets and slabs for rolling, f11 12s. 6d. [f10 7s. 6d.].	
Blooms, billets and slabs for forging, f12 15s. [f11].	
Ingots for rerolling, f9 5s.	

*Prices in brackets are the official control prices for domestic business effective till Feb. 1.

The nitrate plant that was being erected in Toledo, Ohio, by the Government will be offered for sale, according to an announcement made by the Commerce Club of that city. Work on the plant will be suspended after partially completed buildings are under roof.

Joseph T. Ryerson & Son, Chicago, St. Louis, New York and Detroit, have opened an office in the Widener Building, Philadelphia.

San Francisco

SAN FRANCISCO, Dec. 10.

General inactivity is reported, pending adjustment and reconstruction, as well as the uncertainty about prices in the coming open market for iron and steel. Some uneasiness is felt over the export trade which was expected to develop from this port after the war. Japan is understood to be in the midst of a more or less serious panic in the iron and steel trade, and it is reported that some products—one specific instance being bids on pumps for shipment to the East Indies—have already encountered the competition of lower prices from Great Britain. It is believed here that the threat of early British competition was at the bottom of the panicky feeling in Japan and the cause of the cancellation of many orders given to Americans by the Japanese. The local representatives of Eastern tubular goods seem to have less dread of this competition than those who handle iron and steel material of other description.

Bars.—As yet there is no change in the market for bars. It is anticipated that an early resumption of building will occur and it is also expected that many bridges will be built of reinforced concrete. These with the many concrete structures planned for the early spring should make a live market for this class of material. However, the local mills are well equipped to take care of a heavy demand.

Structural Steel.—With the resumption of peace activities, a good demand for structural shapes is looked for. But it is not believed that it will approach the demand arising out of the construction of so many shipyards on this coast, and, on account of the growing inclination to use concrete in buildings, it will probably be some time before the local market is as active even as the pre-war period.

Plates.—Conditions in this line reflect the general market. There is little buying except for Government work. Jobbers report easier deliveries.

Sheets.—Some demands for sheets, which were urgent, have been satisfied since the signing of the armistice, according to local jobbers. A much larger trade is looked for with the opening of spring.

Wrought Pipes.—Better deliveries can now be had on wrought pipe, and several instances of shipments to important industries, which could not be made during the progress of the war, are reported.

Cast-Iron Pipe.—While orders for cast pipe are being held up by the uncertainty of its future price, an encouraging feature comes in the fact that the Orient is feeling out the market. Inquiries regarding prices, deliveries, etc., have been received from Japan, China and the East Indies. Apparently no competition in this class of products has started in that part of the world.

Pig Iron.—The local market shows no change. The small quantities coming here are entirely under contract.

Coke.—The market continues in fair condition. While far from plentiful, coke is much easier than a few months ago, and the foundries and mills are having all their needs met. No surplus, however, is being stored for future use.

Old Material.—Scrap continues scarce and would be much higher except for Government restrictions. Most of the users of scrap believe that this should be the last of the iron and steel products from which the Government should release its control. We quote prices of scrap, per gross ton, as follows:

Steel scrap for cupola use.....	\$34.00
First grade iron (machinery, railroad, agricultural)	34.00
Second grade (brake shoes).....	30.00
Third grade (clean broken stove plates).....	28.00
Fourth grade (grate bars, acid scrap, free from burned iron)	20.00

The Union Metal Co., Milwaukee, has been incorporated with a capital stock of \$10,000 to do a wholesale and retail business in scrap and refined metals. The principal stockholders are Aaron Adashek and Joseph Smoller, who have been engaged individually in the junk business in Milwaukee for many years.

New York

NEW YORK, Dec. 17.

Pig Iron.—Pig iron sellers are not yet ready to adopt the suggested reduction of \$3 per ton, and while they may do so after Jan. 1 they do not intend to be hasty about it. It is pointed out that on a showing of high costs made to the War Industries Board, which was not presumed to be in favor of advancing prices without good reason, certain prices were advanced Oct. 1 and the new basing system was adopted. It was also asserted that the costs have not declined since October and that no reason exists for lowering quotations. A careful survey of the South has revealed a strong situation in that part of the country with very little iron for sale for the first half of 1919. Southern furnaces which had taken about 50,000 tons of basic, recently canceled by the British buyers, have declined to reinstate that tonnage, or any part of it, at the request of the buyer. Inquiry for about 20,000 tons of foundry grades for export to Japan is pending. This inquiry comes from well-known and reputable houses, but some doubt is expressed as to whether all of the business will be placed. The brokers who have been endeavoring to obtain iron to meet the Japanese demand have had difficulty in doing so. The furnace at Talladega, Ala., which was expected to make iron for Japan, has gone out of commission on account of an accident and will be out for some time. We quote prices as follows for tidewater delivery for Northern and Southern grades up to Jan. 1:

No. 1 X, silicon, 2.75 to 3.25.....	\$41.30
No. 2 X, silicon, 2.25 to 2.75.....	39.55
No. 2 plain, silicon, 1.75 to 2.25.....	38.30
No. 2 X Virginia, silicon, 2.25 to 2.75.....	42.95
No. 1 Southern (all rail).....	42.95
No. 2 Southern (all rail).....	41.70

Finished Iron and Steel.—An interesting test of the ideas of both sellers and buyers of future market values is afforded by a sale to a large locomotive company of 5000 to 6000 tons of plates for delivery in January at 3c. per lb., base, or $\frac{1}{4}$ c. under the present Government maximum price and at the levels suggested by the steel manufacturers' committee as the new basis on which to continue business. Sellers are not agreed as to the future course of prices. Some refrain from bidding and some quote nothing less than the present maximum prices. This is especially true of steel plates. Outside of the above transaction, very little new domestic business is reported. Export inquiries continue in considerable numbers, particularly for plates and bars. In steel bars a fair business has been done for export at prices higher than the present maximum domestic levels, and a large export company reports sales of various lots of sheets, plates, bars and other products to the Orient, South America and Norway at somewhat above prevailing domestic prices. A sale of 50 tons of tacks has been made to an Oriental buyer, as well as a fairly large quantity of tool steel bars. The domestic bar market appears to be firm at unchanged levels, with export business in fair volume. New demand in structural steel is negligible. The McClintic-Marshall Co. is low bidder for about 12,000 tons of steel for the 20 wireless towers, each about 820 ft. high, which are to be erected for the Navy at Monroe, N. C. The original plan was to build these largely of brick with the superstructure of steel, but it was found that it would cost about one-third more to use brick, as revealed by the earlier bids which ran from over \$3,000,000 to \$4,000,000. We quote mill shipments as follows: Steel bars, 2.97c.; shapes, 3.07c.; plates, 3.27c.; common bar iron, 3.77c., and refined bar iron, 5.27c., all New York. Out-of-store prices are 1c. higher.

Ferroalloys.—The market for both ferromanganese and spiegeleisen continues entirely inactive, consumers being apparently well provided with stocks and awaiting developments as to future prices. The blast furnace reports of THE IRON AGE show the production of ferromanganese for November to have been over 36,000 gross tons, or the largest in the history of the industry. This, together with the fact that production has advanced, with but little interruption, month by month

as the year has progressed, indicates that stocks are large. This is true even to a greater degree of spiegeleisen. On what little inquiry has appeared quotations have generally been \$240 to \$250, delivered, for 70 per cent ferromanganese, and for spiegeleisen \$70, furnace, for any analysis up to 22 per cent. There have been sales of one or two carloads of ferromanganese at \$250, delivered. The market for 50 per cent ferro-silicon is quiet and steady at \$140 to \$150 on contract, with the spot market from \$150 to \$160 per ton. The United States Steel Corporation, it is understood, has contracted for about 30,000 tons for its 1919 requirements.

Cast-Iron Pipe.—It is expected that prices of cast-iron pipe will be revised about Jan. 1 if prices of pig iron are reduced \$3 per ton. The reduction will probably be fully \$3 and may be more, as scrap is much lower. Government prices are \$67.70, New York, for 6-in. and heavier; \$70.70 for 4-in., \$77.70 for 3-in., and \$1 additional for Class A and gas pipe.

Old Material.—The decline in old material continues and on some grades extremely low prices are being made, especially on heavy melting steel, which is now quotable at \$17.50 to \$18, a decline of about \$5, while much lower prices are being made on iron and steel car axles and other grades. The mills are buying in a moderate way, but the market is still very dull. We quote buying prices of dealers and brokers, per gross ton, New York, as follows:

Heavy melting steel.....	\$17.50 to \$18.00
Re-rolling rails	23.00 to 24.00
Relaying rails	58.00 to 60.00
Iron and steel car axles.....	28.00 to 30.00
No. 1 railroad wrought.....	28.00 to 30.00
No. 1 railroad wrought, cut to not less than 10 in. or over 24 in.....	28.00 to 30.00
Wrought-iron track	24.00 to 25.00
Forge fire	17.00 to 18.00
No. 1 yard wrought, long.....	23.00 to 24.00
Light iron	7.00 to 8.00
Cast borings (clean).....	13.00 to 14.00
Machine shop turnings.....	13.00 to 14.00
Mixed borings and turnings.....	13.00 to 14.00
Iron and steel pipe (1 in. minimum diameter), not under 2 ft. long.....	21.00 to 22.00
Stove plate	20.00 to 21.00
Locomotive grate bars.....	20.00 to 21.00
Malleable cast (railroad).....	24.00 to 25.00
Old carwheels	25.00 to 26.00
Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton, are:	
No. 1 machinery cast.....	\$29.00 to \$30.00
No. 1 heavy cast (columns, building materials, etc.), cupola size.....	26.00 to 27.00
No. 1 heavy cast, not cupola size.....	22.00 to 23.00
No. 1 cast (radiators, cast boilers, etc.)	24.00 to 25.00

Cincinnati

CINCINNATI, Dec. 17—(By Wire).

Coke.—Some furnaces drawing fuel from the Connelville district are having difficulty in keeping their plants going, as deliveries from that section are still very much curtailed. Wise County, New River and Pocahontas districts have not suffered to any great extent since the first wave of the epidemic passed over, and consumers drawing from those districts are not inconvenienced. No talk of future contracting is heard and nothing except odd carload lots urgently needed has been sold recently.

Finished Material.—Mills in this district are quoting a reduction of 30c. per 100 lb. on one-pass, cold-rolled black sheets and 20c. on galvanized flat sheets. These reductions are on a Pittsburgh basis and apply only on new business and for shipment after Jan. 1. The reduced prices are not operative in any case on old orders covered by contracts. Inquiries are fairly good and a small tonnage has been placed on the new basis. It is worthy of note that the manufacturing and jobbing trades are taking shipments on former orders without question, and as their stocks are practically depleted they are urging forward the material due them. As far as the warehouses are concerned, no changes have been made on material to be delivered from stock, and none is contemplated until after the end of the year. Jobbers' stocks were never so low as now, and while the

mills have some unfilled orders it would cause no embarrassment if these orders were filled promptly. Much of the material would be moved out on orders booked by the jobbers some time ago on which deliveries could not be made. The wire nail situation is unchanged, with the exception of a few carloads that have lately been sent forward by the mills, which were more than sufficient to relieve the shortage that has existed during the past few weeks.

The following are local jobbers' prices: Steel bars and small structural shapes, 4.13c. base; large rounds and squares 2 in. and over, 4.23c. base; plates, 4.48c. base; No. 10 blue annealed sheets, 5.48c.; steel bands, 3/16 in. and lighter, 4.98c. base (using the new band list). Reinforcing concrete bars, 4.25 1/2c., and wire nails, \$4.23 per keg base.

Pig Iron.—Evidently anticipating the future to some extent, furnaces in southern Ohio and in the South have been for some time quietly taking on business for first half shipment. Estimates made as to future business booked in the two districts range from 75 to 90 per cent of output for the period named. While a number of cancellation orders have been accepted, it is stated that the iron released will barely take care of the new demand. As the situation now is, the furnaces represented here are refusing to take on any new business below the present maximum Government prices. However, reports from other districts indicate that some producers are willing to sell iron at the new proposed schedule for future shipment. The general idea with local sales representatives is to sit tight and await developments. The holiday season has always been a very dull one and it is not at all improbable that it will be well along in January before any definite information as to the plans of the furnaces supplying this market will be known. The melt of foundry iron is decreasing, but there is no change reported in the consumption of basic. High silicon iron is still in good demand for nearby shipment, and lately one sale of 500 tons was made at the present schedule price for shipment within the next 60 days.

Based on freight rates of \$3.60 from Birmingham and \$1.50 from Ironton, we quote, f.o.b. Cincinnati:

Southern coke, No. 1 foundry and 1 soft.....	\$38.85
Southern coke, No. 2 foundry and 2 soft.....	37.60
Southern coke, No. 3 foundry.....	37.10
Southern No. 4 foundry.....	36.85
Southern gray forge.....	36.60
Ohio silvery, 8 per cent silicon.....	49.30
Southern Ohio coke, No. 1.....	37.05
Southern Ohio coke, No. 2.....	35.80
Southern Ohio coke, No. 3.....	35.30
Southern Ohio malleable Bessemer.....	36.30
Basic, Northern	24.80
Standard Southern carwheel.....	54.60

Old Material.—Dealers have been more willing to take a chance on the future, and some heavy melting steel scrap has been sold around \$24 for first quarter, delivered at consumers' plants. In at least one case the dealer made a limited sale short on the market, thus indicating that not much faith is placed in reports that advances may be looked for after the end of the year. Practically no cast scrap is being sold for prompt shipment, as nearly all foundries have more scrap on hand than they can use. No changes in quotations can be made on any grades. The following are buying prices, f.o.b. cars Cincinnati and southern Ohio, in carload lots:

Bundled sheet	\$17.00 to \$18.00
Old iron rails.....	28.50 to 29.00
Relaying rails, 50 lb. and up.....	44.50 to 45.00
Re-rolling steel rails.....	28.50 to 29.00
Heavy melting steel.....	23.00 to 23.50
Steel rails for melting	23.00 to 23.50
Old carwheels	23.00 to 23.50
Per Net Ton	
No. 1 railroad wrought.....	\$22.00 to \$22.50
Cast borings	10.50 to 11.00
Steel turnings	11.00 to 11.50
Railroad cast	23.00 to 23.50
No. 1 machinery	25.00 to 25.50
Burnt scrap	16.00 to 16.50
Iron axles	33.00 to 33.50
Locomotive tires (smooth inside).....	28.00 to 28.50
Pipes and flues	17.00 to 17.50
Malleable cast	20.00 to 20.50
Railroad tank and sheet.....	14.00 to 14.50

After being on steel for shells since early in 1915 the rolling mills at the Steelton, Pa., plant of the Bethlehem Steel Co. have gone back to rails.

Cleveland

CLEVELAND, Dec. 17.

Pig Iron.—The \$3 per ton reduction in the price of pig iron recommended by Judge Gary has been accepted by one firm in the Cleveland territory, which has made sales of several small lots of foundry iron for the first half of 1919 at \$31. No sales of other grades are reported. One large selling agency announces that it will probably reduce its price to the new basis, but has not had any inquiry on which to quote during the past few days. Other sellers are playing a waiting game and state that they have not decided whether to cut down their price or not. One has made quotations for the first half at the present Government price. Foundrymen are attempting to buy spot iron at the reduced price, but sellers seem to be holding to the Government maximum for the remainder of the month. New inquiry is light, as consumers generally are awaiting developments. Being unable to secure cancellations of their iron purchased to fill Government orders, some consumers are now asking furnaces to extend deliveries on this iron, as in many cases it was purchased in a larger volume than will be needed. Producers are expected to adopt a liberal policy in granting extensions. The question of revision of present contracts for first half iron to the new price is looming up as one of great importance. Nearly all these contracts provided that should Government price regulation be removed, the last Government price shall prevail. Technically consumers are held to the present prices under these contracts. However, had the Government seen fit to continue regulation of prices with the \$3 reduction the contract price would have been automatically lowered to the new price, but as the Government did not see fit to continue price regulation and as the industry through Judge Gary went on record in favor of the price reduction, there is a feeling that producers are morally bound to lower their prices. The pig iron committee has completed its work of allocating pig iron, having disposed of the last lot during the week. This was 14,000 tons, all in foundry iron for prompt shipment. It was furnished to the account of the Emergency Fleet Corporation and was allocated to the Japanese interests on the Pacific Coast. It is expected that the iron will be shipped to Japan. During the week the committee canceled allocations for 6000 tons of basic and 400 tons of foundry iron. Since the committee has been allocating iron for the Government, starting last May, it has placed approximately 2500 separate orders for a total of 1,866,000 tons. Southern producers are apparently so far holding to the present Government price for next year. One Southern seller has agreed to the cancellation of two lots aggregating 1000 tons that were taken in this city for that delivery. The McKinney Steel Co. has placed one of its Cleveland furnaces back on foundry iron. This furnace was turned over to basic iron some time ago when a large order was taken for the British Government. We quote delivered Cleveland for December delivery, as follows:

Bessemer	\$36.60
Basic	33.40
Northern No. 2 foundry.....	34.40
Southern No. 2 foundry, silicon, 2.25 to 2.75..	40.25
Gray forge	33.40
Ohio silvery, 8 per cent silicon.....	49.90
Standard low phosphorus, Valley furnace....	53.00

Iron Ore.—With the proposed reduction of \$3 a ton on pig iron some producers are looking for lower prices on ore, which are 70c. a ton higher than at the opening of the season. However, the last advance of 25c. made Oct. 1 did not affect over 20 per cent of the ore shipped this year. It is stated that the question of ore prices for next year was not discussed at the recent New York meeting of the American Iron and Steel Institute and producers are taking a decided stand against any reduction. They contend that there is no indication of a reduction in mining costs, that the price advance has been very moderate as compared with other advances, that the margin of profit is very small at present prices and that a reduction would mean the shutting down of

some mines that could not be operated profitably at lower prices. Ore prices may not be named for several weeks, as an early buying movement is not expected.

Old range Bessemer, \$6.65; old range non-Bessemer, \$5.90; Mesaba Bessemer, \$6.40; Mesaba non-Bessemer, \$5.75.

Coke.—Some contracts for by-product foundry coke for the first half of next year are being taken in this territory by a Cleveland producer. With the removal of territorial restrictions, Virginia coke can now be had for shipment in this territory, but the delivery price is approximately \$2 a ton higher than Connellsville coke. Shipments of Connellsville coke are good and foundries are well supplied with fuel.

Bolts, Nuts and Rivets.—Bolt, nut and rivet makers are adhering to present prices while they await developments in the steel market. They will hold a meeting about Jan. 20, when the matter of price revision will probably be taken up, but do not expect to change prices in the meantime. New demand for both bolts, nuts and rivets is light.

Finished Iron and Steel.—The trade generally has accepted the new prices suggested by the American Iron and Steel Institute. The important question now before some producers is as to whether contracts already on the books for delivery next year shall be readjusted on the new basis. Some mills will make shipments on existing orders after Jan. 1 at the reduced prices, but others say they will adhere to the contract price. Some buyers are asking for December delivery at the new prices, but all mills are declining to make shipments this month at the reduced figures. Some mills are accepting cancellations on contracts provided the buyer produces proof that the Government has canceled the order for which the steel was purchased, and this will remove considerable tonnage from the books. There is a disposition among some of the plate mills to hold to present prices. An Eastern mill is quoting the present price and in some cases a higher price for boiler plates for early delivery, and a Cleveland mill is selling plates at this price, the delivery of which will extend into next year, thus facing the uncertainty of being able to hold up the price after December. A moderate volume of inquiry is coming out for steel bars, plates and structural material, nearly all for early shipment. Some round lot orders for bars have been placed by the automobile and parts manufacturers. Sheet bars are in good demand and some sales are reported for December delivery at the present price and for the first quarter at the new price. Some orders for shell discard cannot be filled because of the cancellation of the Government shell steel orders. Ohio sheet mills have accepted the new prices and are taking business for the first quarter. A fair volume of sheet business is coming out. Prices on bar iron and hard steel bars have not yet been reduced in this territory, but a readjustment is expected. Jobbers quote:

Steel bars, 4.07c.; plates, 4.42c.; structural material, 4.17c.; No. 10 blue annealed sheets, 5.42c.; No. 29 black sheets, 6.42c.; No. 28 galvanized sheets, 7.67c.

Old Material.—The scrap situation was apparently never more upset than it is at the present time. With removal of Government regulations and lower pig iron and steel prices coming Jan. 1, the trade looks for a marked decline in prices, but there have been no transactions during the past week to give any intimation as to the extent of the decline. At present the market is decidedly weak. Dealers have been crowding the mills with so much material during the past few days in order to make deliveries before the end of the year or before orders are canceled that there is an embargo against scrap for about all the Cleveland mills, and some of the Valley mills are getting material faster than they wish. Trading between dealers has subsided, as the trade is now pretty well covered on uncompleted contracts. No demand is expected from the mills before January and dealers are awaiting word as to what the mills will be willing to pay. Some quote heavy melting steel at \$26 to \$27, but the former price apparently more nearly represents the market. One sale of turnings is reported at \$15, but this has been rejected by a Cleveland mill and the owner desired to dispose

of it quickly. We quote prices per gross ton at consumers' yards in Cleveland and vicinity as follows:

Steel rails	\$26.00 to \$27.50
Steel rails, under 3 ft.....	29.00 to 30.00
Steel rails, rerolling.....	32.50 to 33.50
Iron rails, nominal.....	39.00
Iron car axles, nominal.....	46.50
Steel car axles, nominal.....	46.50
Heavy melting steel.....	26.00 to 27.00
Cast borings	17.00 to 17.50
Iron and steel turnings and drillings.....	17.00 to 17.50
Compressed steel scrap.....	26.00 to 26.50
No. 1 railroad wrought.....	32.00 to 33.00
Cast iron car wheels, unbroken, nominal.....	27.00
Cast iron car wheels, broken, nominal.....	30.00
Agricultural malleable	22.00 to 23.00
Railroad malleable	32.00 to 33.00
Steel axle turnings.....	22.00 to 22.50
Light bundle sheet scrap, nominal....	22.00 to 22.50
Cast iron	26.00 to 27.00
Cast iron, broken, nominal.....	30.00
No. 1 busheling.....	26.75 to 27.00
Railroad grate bars, nominal.....	23.00 to 24.00
Stove plate, nominal.....	23.00 to 24.00

Complaint Against Bridge Company

WASHINGTON, Dec. 17.—The Federal Trade Commission has issued a formal complaint against the National Bridge Co., Indianapolis, maker and seller of designs and working plans for the construction of bridges. The complaint alleges, on information and belief, as follows:

That Daniel B. Luten, who is in complete control of the concern, in 1902 filed in the United States Patent Office an ambiguous application relating to alleged improvements in reinforced concrete bridges, which application was finally rejected in 1911 as not presenting patentable subject matter. By revising and redrafting the original application he presented claims covering features of bridge construction conceived subsequently and succeeded in procuring, through divisional applications, about 46 patents containing approximately 400 detailed claims.

That with the intent, purpose and effect of compelling and coercing bridge contractors and builders to pay large sums of money as royalties for alleged infringement of the several patents, Luten, through the National Bridge Co., and his attorney, Frank H. Drury of Chicago, procured about 23 consent decrees, by agreeing with certain builders and contractors, to waive claims against them for damages or to accept a trivial consideration, in view of their consent, and used these consent decrees as a basis for advertisement, which were circulated among bridge builders and contractors, and in which it was intimated that the decrees were entered after full trial on the merits.

The firm was cited to appear before the Commission in Washington on Jan. 20, 1919.

Canadian War Trade Board Keeps Some Control

The War Trade Board, Ottawa, Canada, announces that, in view of recent developments which have made the steel situation somewhat easier, and especially the fact that certain United States restrictions have been lifted and others modified, permitting shipments of plates, boiler tubes, etc., being made to Canada more easily, it will be unnecessary to apply to the Board for release from stocks on forms which were provided for this purpose, nor will it be necessary to supply monthly reports as in the past. Dealers and others are now at liberty to dispose of their stocks wherever they can, but the Board reserves the right to fix prices in the event of complaints that prices which are being charged are excessive.

The Wisconsin Motor Mfg. Co., Milwaukee, which has increased its capital stock from \$1,000,000 to \$2,000,000, has filed a trust indenture to the Wisconsin Trust Co., stipulating that no mortgage may be placed on the property while five unsecured notes for \$50,000 each, or a total of \$250,000, are outstanding, except by consent of 75 per cent of the preferred stock and the notes.

A petition in bankruptcy has been filed against the Wire Products Co., 55 Liberty Street, New York, by a number of creditors with obligations aggregating \$31,500. The company was incorporated in 1912 with a capital of \$500,000.

IRON AND INDUSTRIAL STOCKS

Industrial Stocks Display Strength—Railroad Stocks Hesitate—Liberty Bonds Heavily Sold

The outstanding feature of the week has been the heavy selling of Liberty bonds, attributed to large holders shifting their investments to stocks and bonds yielding a higher rate of income. Railroad stocks have inclined to weakness, especially marked when announcement was made of Director General McAdoo's proposition that the railroads be retained under Government control for a period of five years. Industrial stocks, on the other hand, have been firm, with quite important advances in the shares of equipment companies.

The range of prices on active iron and industrial stocks from Tuesday of last week to Wednesday of this week was as follows:

Allis-Chalm. com. 29 1/4 - 33 3/4	Gulf States Steel. 67 3/4 - 68
Allis-Chalm. pf. 83 - 85 1/2	Int. Har. com. 113 1/4 - 115
Am. Can. com. 45 1/4 - 47 1/2	Int. Har. pf. 114 - 114 1/2
Am. Can. pf. 97 1/2 - 98	Lackaw. Steel. 68 1/2 - 70 1/4
Am. Car & F. 85 1/4 - 91 1/4	Lake Supr. Corp. 17 1/4 - 19 1/2
Am. Car & F. pf. 107 1/4 - 110	Midvale Steel. 44 3/4 - 47
Am. Loco. com. 63 - 64 1/2	Nat. Acme. 30 - 30 1/4
Am. Loco. pf. 100 3/4 - 101	Nat. En. & S. c. 44 3/4 - 48 3/4
Am. Radiator c. 295 - 298	N. Y. Air Brake. 102 - 103 3/8
Am. Ship com. 119 - 120 1/2	Pressed Steel c. 63 3/4 - 67
Am. Ship pf. 85	Ry. Steel Spg. c. 74 1/4 - 78 1/2
Am. Steel Fdries. 87 - 92 1/4	Ry. Steel Spg. pf. 103 3/4 - 104
Bald. Loco. com. 74 1/4 - 78 1/2	Republic com. 74 1/2 - 78 1/4
Beth. Steel com. 64 - 68 1/4	Republic pf. 98 1/2 - 100
Beth. Stl. Cl. H. 63 1/4 - 69	Sloss com. 49 - 51
Beth. Steel pf. 91	Superior Steel. 36 1/4 - 37 1/4
Case (J. I.) pf. 92	Transue-Williams. 39 1/2 - 40 1/2
Central Fdry. c. 35 - 39	Un. Alloy Steel. 38 - 39 1/2
Chic. Pneu. Tool. 68 - 69	U. S. Pipe com. 15 1/4 - 16 1/2
Colo. Fuel. 39 - 41 1/2	U. S. Pipe pf. 46 - 46 1/2
Cruc. Steel com. 56 3/8 - 60 3/8	U. S. Steel com. 95 1/4 - 99 3/4
Crucible Steel pf. 89 - 90	U. S. Steel pf. 112 3/4 - 113 1/4
Gen. Electric. 149 - 152	Westingh. Elec. 42 1/2 - 44 1/2
Gt. No. Ore Cert. 31 3/4 - 33 3/4	

Dividends

The American Brake Shoe & Foundry Co., quarterly, 1 1/4 per cent on the common and 1 1/4 per cent on the preferred, payable Dec. 31.

The Canadian Crocker-Wheeler Co., quarterly, 1 1/4 per cent on the common and preferred stocks, payable Dec. 31.

The J. I. Case Threshing Machine Co., 1 1/4 per cent on the preferred, payable Jan. 1.

The Colt's Patent Fire Arms Mfg. Co., quarterly, \$1.50, payable Dec. 31.

The Empire Steel & Iron Co., 3 per cent on the preferred and 2 per cent on account of accumulated dividends, payable Jan. 2.

The International Harvester Co., quarterly, 1 1/2 per cent on the common, payable Jan. 15.

The Standard Parts Co., quarterly, 1 1/4 per cent on the preferred, payable Jan. 1.

The Standard Screw Co., quarterly, 6 per cent on the common and 3 per cent on the preferred, payable Jan. 1.

The Steel Co. of Canada, quarterly, 1 1/2 per cent on the common and 1 1/4 per cent on the preferred, payable Feb. 1.

The United Shoe Machinery Co., quarterly, 50c. on the common and 37 1/2 c. on the preferred, payable Jan. 4.

General Steel Committee Disbanded

With the end of the present week—that is, on Dec. 21—the Committee on Steel and Steel Products of the American Iron and Steel Institute will discontinue its activities. This decision is in line with the announcement by the War Industries Board at Washington that it would cease to function on Dec. 31. Formed in the early months of this country's war effort to co-operate with the War and Navy departments in the furnishing of steel products for the Government's use, the steel committee, of which E. H. Gary has been chairman and E. A. S. Clarke, secretary, later represented the industry in all its co-operation with the War Industries Board, particularly in the arduous work of price establishment and of finding ways and means of increasing the country's output of steel for the purposes of war. The various sub-committees, which are composed of members of the American Iron and Steel Institute, are being disbanded also, their members having received a letter of thanks and commendation from Chairman Gary in the past week.

PERSONAL

Frederick Pearson, who for the past fifteen years has been associated with Marshall Field & Co., as advisory engineer, in the development of its various manufacturing and merchandising enterprises in Chicago and elsewhere, announces that he has entered the practice of consulting engineer, with offices at 25 East Washington Street, Chicago. He will continue as advisory engineer to the above firm, in addition to other interests engaging his service. Mr. Pearson's experience has been diversified, embracing electrical, mechanical and chemical engineering.

T. J. Bitner, who has resigned as superintendent of the 14-, 16- and 34-in. rolling mills at the Steelton, Pa., plant of the Bethlehem Steel Co., was presented with a gold watch by fellow employees, Dec. 7.

W. P. Starkey, general superintendent, Harrisburg Pipe & Pipe Bending Co., Harrisburg, Pa., sailed for Scotland on a business mission, Dec. 16, accompanied by Thomas Edwards, chief roller, and Charles A. Bender.

K. E. Humbert of Perin & Marshall, consulting engineers, 2 Rector Street, New York, has returned from a business trip to India, Malay States, China and Japan.

Robert Perry has resigned as secretary and treasurer of the National Drawn Steel Co., East Liverpool, Ohio, and has been succeeded by Emil Glaser.

Paul A. Dratz, Chicago representative of the Whitening Foundry Equipment Co. for the past twelve years, has resigned to engage in other business.

Sir Clement Francis Poppleton of London, an authority on tinplate manufacture, arrived in San Francisco recently en route to Australia. He has been called by the Australian Government to devise means whereby Australia's rich resources in the essential raw materials may be utilized in the production of tin cans on an extensive scale.

Joseph H. Frantz, American Rolling Mill Co., Columbus, Ohio, was elected vice-president of the Ohio Manufacturers' Association at the eighth annual convention held in Columbus, Dec. 10 and 11. Among those elected to the Executive Committee are A. H. Tuechter, Cincinnati-Bickford Tool Co., Cincinnati; C. F. McGilvray, Robbins & Myers Co., Springfield, Ohio; R. C. Kirk, La Belle Iron Works, Steubenville, Ohio, and L. W. Campbell, Youngstown Sheet & Tube Co., Youngstown.

The Brown Hoisting Machinery Co., Cleveland, announces the following changes in its organization: Harvey H. Brown has been made chairman of the Board of Directors; Alexander C. Brown, president; Melvin Pattison, vice-president, general manager and director; Robert G. Clapp and John F. Price, directors, and Ewen C. Pierce, general manager of sales.

Frank Turner, former comptroller of E. I. du Pont de Nemours & Co., at Wilmington, Del., has been made assistant treasurer of the Buick Motor Co., Flint, Mich., succeeding J. N. Ryan, resigned.

At a recent meeting of the directors of the Continental Motors Corporation, Detroit, G. W. Yeoman was elected treasurer and a member of the board. A. H. Zimmerman, who has been treasurer for some time, has resigned. Mr. Yeoman will continue to act as director of sales and advertising.

Angelo R. Clas and K. F. Schreier were re-elected secretary and treasurer respectively of the Falls Motors Corporation, Sheboygan Falls, Wis., at the annual meeting. In the report of the election given on page 1497 of the Dec. 12 issue of THE IRON AGE, their names were inadvertently omitted.

J. Albert Roesch, Jr., vice-president, Steel Sales Corporation and Steel Products Mfg. Co., Chicago, also a director of the Copper Clad Steel Co., Pittsburgh, has been elected president of the Illinois Athletic Club.

A. E. Kelly of the Debevoise-Anderson Co., New York, who has been with the colors at Fort Thomas, Ky., has been mustered out and returned to the service of the New York company.

H. C. White has been appointed factory manager of the Harris Mfg. Co., Stockton, Cal., and will enter on his new duties Jan. 1. During the last three years Mr. White has been actively engaged in the reorganization of the plants of the Holt Mfg. Co., Stockton, Cal., and Peoria, Ill., and was previously factory manager of one of the large automobile plants at Detroit. The Harris Mfg. Co. is the largest manufacturer of combined grain, bean and rice harvesters on the Pacific Coast.

Ensign Frank Lukens Shants has just completed a flight of 800 miles from Bayshore, L. I., to Brunswick, Ga., and has been honorably discharged from the naval aviation service of the Government, in which he has been engaged since June, 1917. He will be employed in the sales department of the Lukens Steel Co. at Coatesville, Pa., after Jan. 1. Ensign Shants, who is a graduate of the University of Pennsylvania, is the son of G. T. Shants, manager of sales, Lukens Steel Co., Philadelphia.

F. E. Norris, who is now engaged with the Automobiles M. Berliet Co., Lyons, France, which is erecting steel works at that place, arrived in New York on La Lorraine this week. He will spend three or four months on this side, purchasing machinery and getting an organization together. His headquarters will be at the office of Walter Kennedy, Bessemer Building, Pittsburgh, who is consulting engineer for the company.

W. F. Keckeisen, formerly advertising manager of the International Filter Co., and previously associated with the Federal Sign Co., has joined the staff of Russell T. Gray, advertising engineer, Chicago.

Chicago Engineers See Shell-Work Illustrated

At the first annual dinner meeting of the season held by the Chicago section of the American Society of Mechanical Engineers in conjunction with the mechanical section of the Western Society of Engineers, Hotel La Salle, Chicago, Dec. 13, an address was given by D. L. Derrom of Winslow Brothers Co., Chicago, on shell manufacture. With motion pictures, all the operations in making 155-mm. shells from the rough forging were depicted.

The pictures not only showed the production efficiency which had been attained by the methods used in the Winslow plant, but were impressive in their demonstration of the extent to which women are successfully employed. There are few departments in which they are not found performing work in a most satisfactory manner. The extreme care they exercised in using calipers and other instruments exceeded that of the men. If a woman was doubtful about her ability to perform the work, her doubts were quickly dispelled when she saw the pictures. The plant is still turning out shells. Mr. Derrom had extensive shell experience in Canada before going to Chicago.

Of equal interest were motion pictures showing manufacturing operations in the plant of the Amalgamated Machinery Corporation, Chicago. Here were made many of the machines used by the Winslow Brothers Co. The shell machine is of the type in which round shafts are used for ways, which are aligned by a jig and then firmly held by babbitting the bearing surfaces, and on which no machine work is done in the castings. Other parts are attached in similar manner. Mr. Derrom said he considered the manufacture of special machines by the Amalgamated company as the equal of any mechanical achievement of the war. Also shown were pictures of the 200-ft. concrete planers made by the company. Work on a 500-ft. (bed) planer was stopped with the declaration of the armistice. Lucien I. Yoemans of the Amalgamated Machinery Corporation, designer of the machines, was applauded by the engineers, as was his works manager, Ed. Montague.

OBITUARY

JOHN J. CANNON, chief engineer Guerber Engineering Co., Bethlehem, Pa., died from pneumonia Dec. 8, aged 31 years. He was a native of Bucks County, Pa., and a resident of Allentown, Pa., from his boyhood days. He attended the public schools, Bethlehem Preparatory School and Lehigh University, class of 1911. Entering the employ of the Guerber company, he was first in the frog and switch shops, next in the drafting room of the same department, shortly became shop inspector, was next made head of the estimating department for structural work and in 1914 was appointed chief engineer of the company. His career throughout was marked by not only a careful attention to detail but a broad comprehension of the structural business. He was partly or wholly responsible for the designing and erection of the majority of recent coal breakers and washeries in the anthracite fields of Pennsylvania and a considerable number of industrial, munitions and other plants during the great rush period of construction for war purposes, notably the Tioga Iron & Steel Co., Tacony Iron & Steel Co., Bartlett-Hayward forge shop, Symington forge shop, Hess Steel Co., and American Cellulose & Chemical Mfg. Co.

CHARLES C. CHRISTENSEN, an authority on mining machinery, died at his home in Chicago Dec. 13, aged 67 years. He was born in Copenhagen, Denmark, and educated at the Norwegian university, Horton, Norway. He came to this country in 1880. He was associated with the old firm of Fraser & Chalmers, which subsequently became the Allis-Chalmers Co. For 40 years he was associated with this organization as consulting engineer. He was a charter member of the American Association of Mechanical Engineers.

EMILE A. STOTTER, who recently organized the Cleveland Smelting & Refining Co., Cleveland, died Dec. 9 from influenza after a brief illness. His death occurred five days after that of his wife, from the same disease. He was formerly treasurer of the Lake Erie Smelting & Refining Co., and had been associated with the brass and copper industry in Cleveland for a number of years.

EMILE L. STRAUSS, president National Association of Brass Manufacturers, and president Central Brass Mfg. Co., maker of plumbers' brass goods, Cleveland, died from influenza Dec. 11, aged 37 years. He was prominent in Jewish circles, being president of the Excelsior Club, a trustee of the Temple, and formerly president of the B'nai B'rith Society. He leaves his widow and one son.

HENRY CLIFTON BULLARD, purchasing agent Bullard Machine Tool Co., Bridgeport, Conn., died Dec. 9 from acute pneumonia. A sad coincidence was the death of his wife only two days later from the same disease. His father, A. H. Bullard, is secretary and treasurer of the company.

J. KING McLANAHAN, long prominent in the iron trade of central Pennsylvania, died at Hollidaysburg, Pa., Dec. 13, aged 91 years. He was in truth a pioneer, his experience running back to the days when nothing but charcoal iron was made in this country.

CHARLES H. JOHNSON, head of the Johnson Bronze Co., New Castle, Pa., and interested in several limestone companies operating in western Pennsylvania, died Dec. 10, aged 48 years. He leaves his widow and five children.

W. F. CURTIS, for the past 33 years manager of the New York office of the Union Mfg. Co., New Britain, Conn., died at his home in Montclair, N. J., Dec. 8, after an illness of nearly eight months.

CHARLES E. WADE, vice-president Standard Steel Tube Co., Toledo, Ohio, died from pneumonia Dec. 5, aged 26 years. He had been connected with the company four years.

JOSEPH W. MORRISON, eldest son of John R. Morrison, secretary and manager Delaware Seamless Tube Co., Auburn, Pa., died in Somerance, France, from shell wounds received in the battle of the Argonne, Nov. 2. Word was received by his father to this effect Dec. 11. He was in his 23d year, and at the time of enlistment was a student at Lehigh University, and enlisted in the University's American Army Ambulance Corps Unit, which was one of the first at the front in France. A younger brother John is at the Italian front with the Pennsylvania State College Ambulance Unit.

Theodore W. Niedringhaus, superintendent of the National Enameling & Stamping Co.'s plant at Granite City, Ill., died at his home in St. Louis Dec. 11 of pneumonia following influenza. Mr. Niedringhaus was 49 years of age. He succeeded his father as superintendent of the enameling and stamping plant at the death of the latter 15 years ago. Deceased was a nephew of Frederick G. Niedringhaus, who with his brother, the late William F. Niedringhaus, founded the stamping company.

JAMES A. DRISCOLL, vice-president and manager Driscoll-Reese Steel Foundry, Hamburg, Pa., and only son of Daniel J. Driscoll, president Delaware Seamless Tube Co., died in Reading, Pa., Dec. 8, from pneumonia, aged 27 years. He was educated in the schools of Reading, Pa., and Holy Cross College, Worcester, Mass. He leaves his widow and four children.

W. F. CURTIS, for the past 33 years manager of the New York office of the Union Mfg. Co., New Britain, Conn., died at his home in Montclair, N. J., Dec. 8, after an illness of nearly eight months.

EDWIN M. MARQUIS, assistant traffic manager Carnegie Steel Co., Pittsburgh, died Dec. 9 at his home at Haysville, Pa. He leaves his widow.

LEO H. LONG, president and general manager Continental Pipe Co., of Tacoma, Portland and Seattle, died in Tacoma Dec. 5, aged 54 years.

Railroad Equipment Expenditures

WASHINGTON, Dec. 17.—The December report of the Division of Capital Expenditures of the United States Railroad Administration contains interesting figures of the status of equipment ordered for the railroads. Of the \$76,873,355 worth of steam locomotives ordered by the Administration, \$28,621,655 had been paid for Nov. 1, and the unexpended balance amounted to \$48,251,700. The locomotives ordered by the companies themselves amounted to \$116,787,626, of which \$56,395,526 had been paid for and the unexpended balance amounted to \$63,192,100. The freight cars ordered by the Administration made up \$289,460,000, of which \$59,193,472 had been paid for and the unexpended balance amounted to \$230,266,528. Besides this, the companies had themselves ordered \$97,080,440 worth of freight equipment, of which \$70,140,989 had been paid, leaving the unexpended balance of \$26,939,451. All of these locomotive and car orders have been charged to the capital accounts of the railroads and none to the operating expenses, for which the Government would be responsible.

Under the head of rails and other track material, a total of \$47,746,055 of authorized work on Dec. 1 was chargeable to operating expenses and \$32,570,648 to the capital account. The second biggest item covered bridges, trestles and culverts, of which \$24,874,402 was chargeable to operating expenses and \$39,757,747 to capital account.

Of all the work itemized in the report, \$1,199,426,026 is charged by the Administration to the capital account as work specifically authorized up to Dec. 1, 1918. Of this, \$463,617,707 was paid out, leaving an unexpended balance of \$735,808,319.

Under the head of operating expenses, the report lists a total of \$144,940,433, of which it had paid \$40,103,318, leaving an unexpended balance of \$104,837,115.

The Tioga Steel & Iron Co., Philadelphia, has filed notice of an increase in debt of \$48,000 with the Pennsylvania State Department.

Metal Markets

The Week's Prices

Cents Per Pound for Early Delivery						
Dec.	Copper, New York		Tin, New York	Lead		Spelter New York St. Louis
	Lake	Electro- lytic		New York	St. Louis	
11.....	26.00	26.00	72.00	7.00	6.70	8.60 8.25
12.....	26.00	26.00	72.00	7.00	6.70	8.60 8.25
13.....	26.00	26.00	72.00	6.87½	6.57½	8.55 8.20
14.....	26.00	26.00	72.00	6.87½	6.57½	8.55 8.20
15.....	26.00	26.00	72.00	6.75	6.40	8.55 8.20
16.....	26.00	26.00	72.00	6.75	6.40	8.50 8.15
17.....	26.00	26.00	72.00			

NEW YORK, Dec. 18.

Government control of all the markets except tin will probably cease Jan. 1. There is no copper buying. The tin market is lifeless. There is no demand for lead. Buying of spelter has nearly ceased. Antimony has declined.

New York

Copper.—Consumers are holding off entirely and there is practically no market. We continue to quote the Government maximum price of 26c. as the asking price, effective until Jan. 1. No sales under this level nor even at this price are reported. The general expectation in the trade is that the copper market will be an open one after Jan. 1 because of the decision of the War Industries Board in the case of steel. Consumers and producers alike are awaiting the course of events. An encouraging factor has been the announcement by the Secretary of War that surplus copper in the hands of the Government will not be thrown on the market so as to disturb it. Approximately 1,000,000 lb. of electrolytic copper rods have been sold for export to France.

Tin.—The tin market continues very quiet with actual conditions hard to analyze. Consumers are not coming forward and taking freely the tin which has been allocated for consumption in this country to the United States Steel Products Co. They are apparently well stocked for the present. Such lots as are accepted must be taken at the fixed price of 72.50c., New York or Chicago, and 71.25c., Pacific ports. The entire situation is developing very slowly, which has not been accelerated by the general halt in business. International control of the market has virtually ceased. In England all allocations have been abandoned and on Dec. 11 the Interallied Tin Executive ceased to make purchases. This means that so far as England is concerned the markets of the East are entirely free. It is acknowledged that every phase of the international control will cease Jan. 1. So far as this country is concerned the market will continue under control until the tin allocated to the United States Steel Products Co. is disposed of, unless a plan which has been suggested by the Tin Importers' Association is accepted by the War Industries Board. This was submitted last Friday. According to this plan, after a determination of the stocks on hand and the probable time necessary for their consumption, consumers desiring to proceed to purchase future tin can do so by agreeing to take an equal amount of tin in the hands of the steel products company, after having been granted a certificate of purchase, this certificate being negotiable in case the consumer desires either to obtain prompt tin or future tin, or both. The future of the tin market depends largely upon the acceptance or rejection of this plan. The market price for such small lots of resale metal as are offered and accepted continues nominal at about 72c., New York.

Lead.—The appearance of offerings of resale metal and the fact that there is no demand for it have weakened the market. It is probable that prompt lead or lead in transit could be bought at 6.75c., New York, or about 6.40c., St. Louis, which we quote as the nominal levels. It is expected that the control of the Lead Producers' Committee over the general market will expire Jan. 1.

Spelter.—The market is extremely dull with new business negligible. Prime Western for early delivery is quoted largely nominal at 8.15c., St. Louis, or 8.50c., New York, with first quarter at 7.90c. to 8c., St. Louis, or 8.25c. to 8.35c., New York. Control prices on Grade A zinc and on sheet and plate zinc are to expire Jan. 1. It is understood that any large stocks of high grade metal in the hands of the Government will not be dumped on the market.

Antimony.—The market has turned weaker on offerings of wholesale lots for prompt and later delivery and it is now quoted largely nominal at 8c. to 8.25c., New York, duty paid.

Aluminum.—Government prices still control the market for No. 1 virgin and for scrap metal at 33c. per lb. for 50-ton lots, at 33.10c. per lb. for 15 to 50-ton lots and at 33.20c. per lb. for 1 to 15-ton lots.

Old Metals.—Business is very quiet and prices are lower. Dealers' selling prices are nominally as follows:

Cents Per Lb.	
Copper, heavy and crucible.....	23.00
Copper, heavy and wire.....	22.00
Copper, light and bottoms.....	19.00
Brass, heavy.....	15.00
Brass, light.....	11.00
Heavy machine composition.....	22.00
No. 1 yellow rod brass turnings.....	11.00
No. 1 red brass or composition turnings.....	18.00
Lead, heavy.....	6.00
Lead, tea.....	5.00
Zinc.....	5.75

Chicago

DEC. 17.—The non-ferrous market is slow, with but little buying of futures and prompt buying confined to small consumers. Sufficient metal is in sight, with the possible exception of tin, which is getting a little scarcer, outside lots having been pretty well cleaned up. Until next year a quiet market is expected. We quote copper at 26c. for carloads and 27.30c. for part carloads; tin, 75c. to 77c.; lead, nominal at 6.85c. in carloads, 7.35c. per lb. for 1 to 25 tons and 7.60c. per lb. for less than 1 ton; spelter, 8.35c. to 8.50c.; antimony, 10c. to 10.50c. On old metals we quote copper wire, crucible shapes, 16.50c.; copper clips, 16c.; copper bottoms, 14.50c.; red brass, 16c.; yellow brass, 10c.; lead pipe, 4.50c.; zinc, 4.50c.; pewter, No. 1, 30c.; tinfoil, 35c., and block tin, 45c.

St. Louis

DEC. 16.—Non-ferrous metals have been in light demand, with lead, carload lots, 6.75c., and spelter 8.30c. In less than carload lots, lead is quoted as 7.25c. to 7.50c. and spelter at 9.50c.; tin, 72.50c.; copper, 27.50c.; antimony, Asiatic, 10c. In the Joplin district zinc blende was quiet and rather weak, although the agreed prices for first and second grades, basis of 60 per cent metal, were paid for certain lots, \$75 per ton in the first instance and \$55.67 in the second. The average for the week, however, because of the small quantities of graded ore sold, was about \$48 for the district. The bulk of the selling was at \$45 and below. In the past fortnight considerable ore has been picked up by smelters at bargain prices. Calamine was quiet at \$35 to \$40, with the average for the week at \$38, basis of 40 per cent metal. Lead ore was very weak, basis of 80 per cent metal selling at \$80 and below. The average for the week was \$80. On miscellaneous scrap metals we quote dealers' buying prices as follows: Light brass, 10c.; heavy yellow brass, 15c.; light copper, 15c.; heavy copper and copper wire, 17c.; pewter, 45c.; tinfoil, 55c.; lead, 5c.; zinc, 5c.; tea lead, 4.50c.

President Hook Incorrectly Quoted

In an article on page 1467 of THE IRON AGE of Dec. 12, James W. Hook, president Allied Machinery Co. of America, was credited with a statement directly the opposite of what he said. As printed, the statement reads: "The weakness of manufacturers abroad lay, he felt, in the prevalence of the one-line plant." It should have read "multiple-line." Mr. Hook's point which he was emphasizing was that, whereas we specialize here and gain all the advantages of the specialization, factories in Europe do not.

Prices Finished Iron and Steel, f.o.b. Pittsburgh

Freight rates from Pittsburgh on finished iron and steel products, including wrought iron and steel pipe, with revisions effective Nov. 1, 1918, in carloads, to points named, per 100 lb., are as follows: New York, 27c.; Philadelphia, 24.5c.; Boston, 30c.; Buffalo, 17c.; Cleveland, 17c.; Cincinnati, 23c.; Indianapolis, 25c.; Chicago, 27c.; St. Louis, 34c.; Kansas City, 59c.; St. Paul, 49½c.; Denver, 99c.; Omaha, 59c.; minimum carload, 36,000 lb. to four last named points; New Orleans, 38.5c.; Birmingham, 57.5c.; Pacific Coast, \$1.25; minimum carload, 80,000 lb. To the Pacific Coast the rate on steel bars and structural steel is \$1.315, minimum carload 40,000 lb.; and \$1.25, minimum carload 50,000 lb. On wrought iron and steel pipe the rate from Pittsburgh to Kansas City is 50c. per 100 lb., minimum carload 46,000 lb.; to Omaha, 50c., minimum carload 46,000 lb.; to St. Paul and Minneapolis, 49.5c., minimum carload 46,000 lb.; Denver, 99c., minimum carload 46,000 lb. A 3 per cent transportation tax applies. On iron and steel items not noted above, rates vary somewhat and are given in detail in the regular railroad tariffs.

Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in. angles, 3 to 6 in. on one or both legs, ¼ in. thick and over, and zebs, structural sizes, 2.80c.

Wire Products

Wire nails, \$3.50 base per keg; galvanized, 1 in. and longer, including large-head barb roofing nails taking an advance over this price of \$2, and shorter than 1 in., \$2.50. Bright base wire, \$3.35 per 100 lb.; annealed fence wire, Nos. 6 to 9, \$4.25; galvanized wire, \$3.95; galvanized barb wire and fence staples, \$4.35; painted barbed wire, \$3.65; polished fence staples, \$3.65; cement-coated nails, \$3.40 base; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 47 per cent off list for railroad lots, 46 per cent for 1000-rod lots, and 45 per cent off for small lots, f.o.b. Pittsburgh.

Bolts, Nuts and Rivets

Large structural and ship rivets.....\$4.40 base
Large boiler rivets.....\$4.50
7/16 in. x 6 in. smaller and shorter rivets..50-10 per cent off list
Machine bolts h.p. nuts, ¾ in. x 4 in.:
Smaller and shorter, rolled threads.....50-10-5 per cent off list
Cut threads.....50-5 per cent off list
Larger and longer sizes.....40-10 per cent off list
Machine bolts, c.p.c. and t. nuts, ¾ in. x 4 in.:
Smaller and shorter.....40-10 per cent off list
Larger and longer.....35-5 per cent off list
Carrage bolts, ¾ x 6 in.:
Smaller and shorter, rolled threads.....50-5 per cent off list
Cut threads.....40-10-5 per cent off list
Larger and longer sizes.....40 per cent off list
Lag bolts.....50-10 per cent off list
Flow bolts, Nos. 1, 2, 3.....50 per cent off list
Hot pressed nuts, sq. blank.....2.50c. per lb. off list
Hot pressed nuts, hex. blank.....2.30c. per lb. off list
Hot pressed nuts, sq. tapped.....2.30c. per lb. off list
Hot pressed nuts, hex. tapped.....2.10c. per lb. off list
C.p.c. and t. sq. and hex. nuts, blank.....2.25c. per lb. off list
C.p.c. and t. sq. and hex. nuts, tapped.....2.00c. per lb. off list
Semi-finished hex. nuts:
¾ in. and larger.....60-10-10 per cent off list
¾ in. and smaller.....70-5 per cent off list
Stove bolts.....70-10 per cent off list
Stove bolts.....2½ per cent extra for bulk
Tire bolts.....60-10-5 per cent off list

The above discounts are from present lists now in effect.
All prices carry standard extras.

Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, \$57; chain rods, \$65; screw, rivet and bolt rods and other rods of that character, \$65. Prices on high carbon rods are irregular. They range from \$70 to \$80, depending on carbons.

Railroad Spikes and Track Bolts

Railroad spikes 9/16 in. x 4½ in. and heavier, per 100 lb., \$1.50 in lots of 200 kegs of 200 lb. each, or more; track bolts, \$4.90. Boat spikes, \$5.05 per 100 lb., f.o.b. Pittsburgh.

Terne Plate

Government prices on all sizes of terne plates are quoted, as the new price schedule has not been announced: 8-lb. coating, 200 lb., \$15 per package; 8-lb. coating, I. C., \$15.30; 12-lb. coating, I. C., \$17.00; 15-lb. coating, I. C., \$18.00; 20-lb. coating, I. C., \$19.60; 25-lb. coating, I. C., \$20.60; 30-lb. coating, I. C., \$21.75; 35-lb. coating, I. C., \$22.75; 40-lb. coating, I. C., \$24.00 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

Iron and Steel Bars

Steel bars at 2.70c. from mill. Refined iron bars, 5.00c.; common iron bars, 3.50c. in carload and larger lots, f.o.b. mill.

Wrought Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card for delivery after Jan. 1:

Steel				Iron			
Inches	Black	Galv.		Inches	Black	Galv.	
1/8, 1/4 and 3/8	47	20½		1/8 and 1/4	26	+1	List
1/2	51	36½		3/8	27		
3/4 to 3	54	40½		1/2	31	13	
				3/4 to 1½	36	20	
Lap Weld				Lap Weld			
2	47	34½		1¼	21	6	
2½ to 6	50	37½		1½	28	14	
7 to 12	47	33½		2	29	15	
13 and 14	37½	..		2½ to 6	31	18	
15	35	..		7 to 12	28	15	
Butt Weld, extra strong, plain ends				Butt Weld, extra strong, plain ends			
1/8, 1/4 and 3/8	43	25½		1/8, 1/4 and 3/8	25	8	
1/2	48	35½		1/2	30	17	
3/4 to 1½	52	39½		3/4 to 1½	36	21	
2 to 3	53	40½					
Lap Weld, extra strong, plain ends				Lap Weld, extra strong, plain ends			
2	45	33½		1¼	22	7	
2½ to 4	48	36½		1½	28	14	
4½ to 6	47	35		2	30	17	
7 to 8	43	29½		2½ to 4	32	20	
9 to 12	38	24½		4½ to 6	31	19	
				7 to 8	23	11	
				9 to 12	18	6	

To the large jobbing trade an additional 5 per cent is allowed over the above discounts, which are subject to the usual variations in weight of 5 per cent. Prices for less than carloads to jobbers will be changed Jan. 1, but new differentials have not yet been decided upon.

On butt and lap weld sizes of black iron pipe, discounts for less than carload lots to jobbers have been seven (7) points lower (higher price) than carload lots, and on butt and lap weld galvanized iron pipe have been nine (9) points lower (higher price).

Boiler Tubes

The following are the prices for carload lots, f.o.b. Pittsburgh, for delivery after Jan. 1:

Lap Welded Steel		Charcoal Iron	
3½ to 4½ in.	37	3½ to 4½ in.	15½
2½ to 3½ in.	27	3 to 3½ in.	+ 2
2½ in.	20½	2½ to 3 in.	+ 4½
1½ to 2 in.	16	2 to 2½ in.	+ 19½
		1½ to 2 in.	+ 32
Standard Commercial Seamless—Cold Drawn or Hot Rolled		Standard Commercial Seamless—Cold Drawn or Hot Rolled	
Per Net Ton		Per Net Ton	
1 in.	\$340	1½ in.	\$220
1¼ in.	280	2 to 2½ in.	190
1½ in.	270	2½ to 3 in.	180
1½ in.	220	4 in.	200
		4½ to 5 in.	220

These prices do not apply to special specifications for locomotive tubes nor to special specifications for tubes for the Navy Department, which will be subject to special negotiation.

Sheets

Makers' price for mill shipments on sheets of United States standard gage in carload and larger lots are as follows, new base prices being given, but no changes being made on other sizes, as differentials have not been announced:

Blue Annealed—Bessemer		Cents per lb.	
No. 8 and heavier	4.20		
Nos. 9 and 10 (base)	3.95		
Nos. 11 and 12	4.30		
Nos. 13 and 14	4.35		
Nos. 15 and 16	4.45		
Box Annealed, One Pass Cold Rolled—Bessemer		Cents per lb.	
Nos. 17 to 21	4.80		
Nos. 22 and 24	4.85		
Nos. 25 and 26	4.90		
No. 27	4.95		
No. 28 (base)	4.70		
No. 29	5.10		
No. 30	5.20		
Galvanized Black Sheet Gage—Bessemer		Cents per lb.	
Nos. 10 and 11	5.25		
Nos. 12 and 14	5.35		
Nos. 15 and 16	5.50		
Nos. 17 to 21	5.65		
Nos. 22 and 24	5.80		
Nos. 25 and 26	5.95		
No. 27	6.10		
No. 28 (base)	6.05		
No. 29	6.50		
No. 30	6.75		
Tin-Mill Black Plate—Bessemer		Cents per lb.	
Nos. 15 and 16	4.80		
Nos. 17 to 21	4.85		
Nos. 22 to 24	4.90		
Nos. 25 and 27	4.95		
No. 28 (base)	4.70		
No. 29	5.05		
No. 30	5.05		
Nos. 30½ and 31	5.10		

Federal Trade Commission on Webb Act

Annual Report Discusses Scope of the Law — Investigating Costs of Manufacturing Steel — Effect of Extras

WASHINGTON, Dec. 17.—Although the annual report of the Federal Trade Commission makes no definite recommendation for the amendment of the Webb law concerning export associations, it points out some difficulties which the wording of the statute presents.

"Numerous requests have been received by the Commission," says the report, "for rulings upon the construction of the export-trade act. It has been deemed inadvisable to attempt at this time to officially construe any of the provisions of the law upon informal applications. This is especially true as the penalty for violation of section 5 of the act is enforceable by the district attorneys of the United States under the direction of the Attorney General, and not by the Federal Trade Commission, and the enforcement of the Sherman law is a duty of the Federal courts upon proceedings instituted by the Department of Justice.

"It is exceedingly important that export associations in process of formation should give careful consideration to the wording of sections 2 and 3 of the export-trade act. As to statements which have been filed with the Export Trade Division under section 5 of this act, it has been noted that practically every corporation formed has been organized for the transaction of some business other than that of solely engaging in exporting from the United States to foreign nations.

"Most of the articles of association filed have also contemplated the transaction of business other than that of exporting to foreign nations. It is apparent under the law that the provisions of the Sherman law and section 7 of the Clayton law remain applicable as to all combinations which are not organized solely for the business of exporting to foreign nations. The business of exporting to the Philippine Islands, to Porto Rico or to Hawaii seems clearly to be domestic and not foreign trade, and the provisions of the Sherman law and section 7 of the Clayton law seem to continue in force as to any association or export corporation which engages in such business.

"One of the difficulties which exporting houses seem to find with the law is that export companies usually both export and import, while the law provides that its protection is given to associations entered into for the sole purpose of engaging in export trade.

South American Criticism

"Some fear has been expressed in South American countries that the effect of the export-trade act will be disadvantageous to the consuming public of foreign nations by strengthening the hands of American trusts, monopolies and combinations of capital in these markets. The Commission has pointed out the fact that the law permits the co-operation of manufacturers who would perhaps not otherwise be able to compete in foreign fields and who, without the law, might hesitate to form co-operative export associations, which will in all probability increase the buying opportunities of the consuming public in foreign countries. The Commission is keeping informed as to the export needs of the country in order to be of assistance so that American producers may co-operate to the fullest extent in export fields, without injuriously affecting domestic commerce or the foreign commerce of those exporters who are associated with export-trade associations."

Investigating Steel Costs

The report contains the following summary of the Commission's work in examining into the cost of steel manufacture:

"The steel investigation involved the costs of production of iron ore, coke, pig iron, crude steel, rolled-steel products and certain other more highly manufactured products. There are more than 100 subdivisions of products included in the classification.

"The work was initiated at the direction of the Pres-

ident in the preceding fiscal year, attention being directed at first to steel used for shipbuilding, namely, plates and shapes. This involved the determination of the costs of the raw materials and semi-finished products. Later the number of products was increased.

"The work at first was conducted by direct audit of the books of the chief steel manufacturers by the accountants of the Commission. During the month of August, 1917, examiners were sent to Cleveland to find the cost of iron ore. On Aug. 10 the Commission sent out a request for coke-cost reports for 1916 and 1917. These, together with iron ore and various imported steel products, were compiled and the first report was presented to the War Industries Board on Sept. 8, 1917, covering ore, coke, pig iron, crude steel and certain steel products for the year 1916, and either May or June, 1917. The month shown for 1917 was the latest for which data could be obtained.

"On Nov. 20 the Commission sent out a request to approximately 400 iron, steel and coke companies directing them to send in monthly copies of their cost sheets for all commodities produced, beginning with the month of October. These data for the month of October were compiled and reports submitted to the War Industries Board on Dec. 21, covering ore, coke, pig iron, crude steel and numerous steel products.

"The compilation of monthly costs has been continued and further general reports were rendered to the War Industries Board on March 18, 1918, and June 18, 1918.

"The costs of production were thus determined for a very large proportion of all the principal products, often in excess of 90 per cent of the total output.

Prices Actually Paid

"Inquiry has been made, furthermore, into the prices actually received for different products, because within each commodity group for which average costs only are generally ascertainable there are numerous different grades, sizes or specifications, and corresponding differentiation of prices. It sometimes happens that while the average cost is below the base price, the actual prices received (which include extras on account of the particular specifications of material) average more than the costs, and sometimes much more.

"In addition to the monthly cost referred to above, the Commission has undertaken the investigation of the costs of special products of particular companies for various branches of the Government. Among these may be mentioned the following: Shell steel, for the War Industries Board; shell steel, for the Navy Department; forging, for the Navy Department; wire rope, for the Navy Department; special alloy steel, for the Navy Department.

"A number of other special audits of individual companies have been made for use in compiling the quarterly report to the War Industries Board. At the end of the fiscal year the following special inquiries were in progress: Cast-steel slugs, agricultural steel, high-speed tool steel, Lake iron ore."

Although the Commission has recommended legislation to legalize price fixing, its annual report does not reflect the recommendation. The annual report, however, was actually written before the Commission made its special recommendation to Congress on the subject of resale prices.

The Independent Pneumatic Tool Co. announces the opening of a branch office and service station in Cleveland on Dec. 15. Thor pneumatic and electric tools and repair parts will be carried in stock at 1103 Citizens Building, under the management of Hayden F. White, who has represented the company in the Detroit, Chicago and Milwaukee districts for some years past.

HIGH PRICES FOR EXPORT STEEL

The British System of War Subsidies Makes Up the Difference

The London *Iron and Coal Trades Review* for Nov. 22 has the following, which is of direct interest to American iron and steel producers, concerning British export prices for steel products. It explains why these were fixed so far above domestic prices and gives some hitherto unpublished information on the British plan of subsidizing iron and steel production, also as to German prices at the end of the war:

"One important matter to be settled between the Ministry of Munitions and the iron and steel trade when once the armistice was signed was the question of subsidies and their relation to prices. As a result of much negotiations and many meetings, an arrangement has been made under which home prices will be continued at their present level. As pointed out in these columns two weeks ago, the actual prices at present charged on iron and steel are not the true economic prices, which would be several pounds a ton higher, if subsidies ceased amounting to £2 or £3 a ton on basic, and up to £8 or more on acid steel made from imported ores. The Parliamentary Secretary of the Ministry, in the House two days ago, stated that in July last subsidies amounting to £47,000,000 had been approved.

"This was all very well when the government was practically the sole purchaser of all the iron and steel produced; but now that the government will retire from the market as rapidly as it can, it will be impossible to continue a charge of this magnitude upon the taxpayers' shoulders.

Subsidies Hold Prices Down

"On the other hand, the subsidies must be continued, otherwise prices would immediately show an enormous rise, with a consequent disorganization of the industry, from the consumer down to the mill boy. Some method, therefore, had to be devised whereby the subsidies could be continued, so that the trade might be steadied, and at the same time the government could be compensated for the amount which they would be called upon to pay in subsidies. It has therefore been decided to make two sets of charges. Export prices will be put up to a reasonable level approximating the economic price, whereas home prices will be kept at the fixed maximums hitherto set by the Ministry. The increase in export prices is thus about £4 to £5 a ton. Billets, for instance, for export become £15 and bars £20. The firms who export have made an arrangement to refund to the government the extra export price which they obtain, which will be set off against the subsidies paid upon the whole output.

Neutrals Should Pay Well for Steel

"On the whole the arrangement seems a satisfactory one, although it will require careful watching, and probably revision from time to time. It is quite clear that the British taxpayer cannot be expected to subsidize the export of steel to neutrals to the tune of several pounds a ton, and in any case the iron and steel industry has every right and reason to obtain as high a price as it can for a commodity which unquestionably will be scarce for some time to come. The neutral nations have not failed to charge us pretty heavily for food supplies and other necessities in war time, and we must endeavor to make the trading now a little less one-sided.

"The export capabilities of Germany are a subject upon which it is difficult to hazard an opinion. Roughly, the price of coal has increased by 100 per cent and coke by a similar amount. Underground miners have also

had their wages doubled. In spite of the necessity for the Germans straining every nerve to regain their export trade, it is not to be expected that high wages can be reduced suddenly in Germany any more than it is possible to do so in this country.

High Prices for German Steel

"In the case of iron and steel, present prices [in Germany] are more than double, and in many cases almost treble. For instance, basic billets, which were £4 15s. before the war, have recently been quoted at £10 2s. 6d., while sheets under 3-mm. gage, which were about £5 17s. 6d., are up at £15 10s. Similar increases are shown in other descriptions. In considering these prices, however, it must be remembered that there is a much greater depreciation in the exchange value of the mark than in the £1 sterling. In the United States billets at Pittsburgh are about £10 a ton, while steel bars are about £13 5s. basis and No. 28 black sheets £22 10s.

"After all, an article is only worth what it will fetch, and if the United States or Germany enters the market as a competitor at much lower prices, then the scheme which has been elaborated will largely fall to the ground. No doubt the parties concerned, before making the arrangement, have satisfied themselves that the demands for export will be such that there will be no difficulty in carrying it out, and it will in any case be subject to revision month by month. It is satisfactory that the labor leaders have agreed that the extra amount realized for export, in view of the fact that it is practically collected on behalf of the government, will not be taken into account in determining wages rates. In the meantime, the rail rollers have been given permission to go full speed ahead on rail orders, while other makers of finished steel are making arrangements to resume their ordinary work."

More Export Restrictions Dropped

WASHINGTON, Dec. 17.—Almost unlimited export to Great Britain, France, Italy, Japan and their colonies is assured by the War Trade Board's wholesale removal of practically all commodities from the restricted list to these countries. The board has also removed many restrictions from the resumption of shipments to Norway, Sweden, Denmark, Holland, Switzerland and Spain, and is helping to increase opportunities for shipping to South and Central America, the West Indies and the Far East. A liberal policy has been adopted toward European countries generally, except as to certain foodstuffs. Chairman Vance McCormick, however, declares there will be no relaxation of the blockade against Germany during the existence of the armistice. The ruling affecting the Allied countries is described by the Board as the most sweeping in its history, including everything except articles on the conservation list, and even this list is rapidly vanishing.

General Goethals has announced for the War Department that ships with an aggregate carrying capacity of 800,000 tons have been designated to be given over by the Quartermaster Department to the Shipping Board for return to trade routes and will be allocated to various countries after consultation with the War Trade Board. It is stated that the War Trade Board will give preference on South American shipments to consignments to the east coast of South America, primarily to Brazil, Argentina, Uruguay and Paraguay. The Board announces the loading of two additional vessels with cargoes for Russia and arrangements for continued shipments through January and February through the activity of the War Trade Board of the United States Russian Bureau, Inc. Most of these cargoes are being financed by private capital acting on information furnished through the Russian Bureau.

Besides a considerable amount of tonnage for South American shipments, vessels will shortly be available for shipments to the Far East.

JERSEY MANUFACTURERS MEET

Readjustment Convention of New Jersey Manufacturers—Forms Industrial Commission

A special meeting of the Manufacturers' Council of New Jersey, known as a readjustment convention, was held at the Robert Treat Hotel, Newark, Dec. 11, with about 300 in attendance. President Warren C. King, in opening, set forth the spirit of the convention, the first of its kind called by any State organization, in remarks dealing with labor, plant readjustment, cancellation of Government contracts and compensation insurance.

With regard to the question of labor, Mr. King said that the Council had made a survey in different parts of the State, a tabulation of replies indicating that up to the present time 361 skilled workers and 1578 unskilled workers have been released by various industries, with other industries short a total of 10,915 unskilled employees. At his suggestion a commission was organized from the membership of the Council to formulate a definite program for the intelligent handling of problems arising through the close of the war. This commission will be composed of five representatives of manufacturing, banking, agricultural, public utility and labor interests respectively, making a total of 30 representatives on the commission, labor having two quotas of five men each from manufacturing and utility fields.

Labor Interests Safeguarded

With regard to the question of existing wage scales for labor, a resolution was passed holding "that there should be no radical reduction in the matter of wages until the purchasing power of the dollar increases, and in any event wages should be the last thing cut in any readjustment."

The speakers at the morning and afternoon sessions included John D. Everett, former president New Jersey State Bankers' Association; Dr. J. G. Lipman, dean and director New Jersey Agricultural Experiment Stations; Myrza Ali Kula Khan, Persian Minister to the United States; Arthur A. Quinn, president New Jersey State Federation of Labor, and Henry F. Hilfers, secretary State Federation of Labor. Col. Austen Colgate, first vice-president of the Council, presided at the afternoon session. In connection with the subject of present working conditions, Mr. Quinn said that overtime must cease and a return be made to the principle of the 8-hr. day. Further, that labor desires to work in full co-operation with capital to insure law and order in the best interests of both.

A luncheon was held at noon and a dinner at 7 p. m. At this latter function the principal addresses were made by W. H. Besler, president Central Railroad of New Jersey; Dr. W. H. S. Demarest, president Rutgers College; Dr. Alexander C. Humphreys, president Stevens Institute of Technology, and Warren C. King, president Manufacturers' Council, who acted as toastmaster.

Among the industrial concerns represented in the organization, many of which had delegates at the meeting, are the following:

A. Allan & Son, Harrison; American Can Co., New York; Automatic Weighing Machine Co., Newark; Barlow Foundry, Inc., Newark (Arthur E. Barlow, secretary-treasurer, being treasurer of the Manufacturers' Council); Bayonne Bolt & Nut Co., Bayonne; Oscar Barnett Foundry Co., Irvington; Eastern Tool & Mfg. Co., Bloomfield; Driver-Harris Co., Harrison; Dover Boiler Works, Dover; Fitzgibbon & Crisp, Inc., Trenton; International Motor Co., Plainfield; Industrial Wire & Metal Works, Newark; Lock Joint Pipe Co., East Orange; Manufacturers Can Co., Harrison; Newark Engineering & Tool Co., Newark; Metal & Thermit Corporation, Chrome; John H. Mathis Co., Camden; Peerless Tube Co., Bloomfield; Pioneer Wire Works, Chelhurst; Portable Machinery Co., Passaic; American Collapsible Tube Corporation, Hoboken; Armstrong Cork Co., Camden; Bless & Drake, Newark; Bound Brook Oilless Bearing Co., Bound Brook; Brunswick Refrigerating Co., New Brunswick; Camden Iron Works, Camden; Condensite Co. of America, Bloomfield; Dexter Metal Mfg. Co., Camden; Didier-March Co., Perth Amboy; Everlasting Valve Co., Jersey City, N. J.; Hercules

Powder Co., Wilmington, Del.; Loyal T. Ives Co., New Brunswick, N. J.; George Krouse Brass Foundry, Jersey City; McNab & Harlin Mfg. Co., Paterson; New York Revolving Portable Elevator Co., Jersey City; Nitrogen Electric Co., Newark; Oxweld Acetylene Co., Newark; Reitan Copper Works, Perth Amboy; Sipp Machine Co., Paterson; F. L. Smith & Co., New York and Elizabeth; Samuel Smith & Son, Paterson; Snead & Co. Iron Works, Jersey City; Somerville Iron Works, Somerville; J. L. Sommer Mfg. Co., Newark; Spicer Mfg. Co., South Plainfield; Standard Metal Mfg. Co., Newark; Standard Wire Co., Harrison; E. S. Metals Refining Co., Chrome; Wall Rope Works, Inc., New York; Warren Webster & Co., Camden; Tisch Machine Tool & Die Works, Elizabeth; and Schwartz-Hermann Steel Works, Inc., Somerville.

President Grace Explains Position of Bethlehem Steel Co.

Replying to the letter of the National War Labor Board, E. G. Grace, president Bethlehem Steel Co., has written a letter explaining his position in regard to labor conditions at Bethlehem. He refers to his letter of Sept. 13, in which he said that the company was ready to provide for collective bargaining and preferred to have the first elections conducted under the supervision of the Board. Mr. Grace says that that statement has not been repudiated in any respect, and he adds:

Your examiners delayed the elections and changed the contemplated plan until it is no longer recognizable, nor is it practical. For instance, under the supervision of the examiners there has been formed a committee on mediation and conciliation of three members (not employees) to be joined by three members nominated by the company and to be presided over by a chairman to be selected by and representing the Secretary of War. It is plain that this arrangement is not suitable for peace conditions. In many other particulars the examiners' plan is unworkable and unacceptable. The plan originally proposed has been most favorably received by the employees of our other plants and is in successful operation there.

As to the other findings of your Board, there seems to us to be a clear understanding expressed by our letter to you of Sept. 13, your letters to the War and Navy Departments and our correspondence and interviews with them. We are not attempting to change this understanding in the least. If good faith with any of our employees requires a readjustment of their wages up to the abandonment of the Government munitions program, we are quite ready to take up the matter under the terms of this understanding, which calls for compensation to us by the departments.

The cancellations of Government orders have been so rapid and so extensive that practically all our work for the war program is finished. We have not on hand what would have amounted to two weeks' work at the rate of production before the cessation of hostilities. We were then making more war material in a day than we made in any year before the war. We do not wish to be understood as meaning to take advantage of this situation to reduce wages. We realize that the readjustment which the country faces should be made gradually and slowly and that any lowering of the present scale of wages should be preceded as far as possible by a reduction in the prices of commodities. We intend to do our full share toward meeting the responsibilities which this places on employers.

Calumet Manufacturers to Form Association

It is stated by the *Calumet Record*, of South Chicago, a publication in close touch with the industrial field of the Calumet region, that about 40 manufacturers are behind a movement to organize the Calumet Manufacturers' Association. Announcements have been issued and a meeting will be held within a few days. The new association will act as a clearing house for interstate and inter-community affairs, such as transportation problems, navigation improvements, freight rates, etc. It is not intended to conflict with existing organizations. Among the companies interested in the formation of the new association are the Interstate Iron & Steel Co., Illinois Steel Co., Whiting Foundry & Equipment Co., Inland Steel Co., Buda Co., Burnside Steel Co., Highland Iron & Steel Co., Chicago Malleable Castings Co., Hammond Malleable Iron Co. and Allied Steel Castings Co.

Machinery Markets and News of the Works

TOOL SALES CONTROL

Gradual Release of Government Surplus

Machine Tool Builders, Dealers and War Department Representatives United on Vital Need to Protect Industry

The meeting of the machine-tool builders and the supply men with General Jamieson, chairman of the Committee on Salvage of the War Department at the Hotel Astor in New York last week, at which an agreement was reached to co-operate in working out a plan for the gradual release of the accumulation of \$300,000,000 worth of Government-owned munition equipment, has acted to strengthen the position of the manufacturer and dealer for the present. It is now generally believed that few price changes are due before next year, and no heavy cut in quotations is predicted before the second quarter. Prior to these sessions the offering of a considerable bulk of machinery of this character, in storage at the Wright-Martin Aircraft Corporation plants and elsewhere, including 450 machines at the works of the H. H. Franklin Mfg. Co., Syracuse, N. Y., had served to introduce an element of uncertainty into market conditions. The spirit of optimism and hearty co-operation evinced by Government representatives and members of the associations in attendance left the conviction that a sane, gradual readjustment of the market to normal conditions will prevail. The vital necessity of such an evolution is universally admitted.

Individually nearly all dealers approve the contemplated plan for the sale of one Government-owned machine for one out of the manufacturers current production; but the feeling is strong that all Government arsenals, navy yards and other shops should be completely re-equipped from this store of new tools before any other step is taken. It is pointed out that at the Rock Island Arsenal some tools have been in operation for 30 years, and that this state of affairs can be duplicated elsewhere. It is felt that the day is past for arsenals to be

the butt of comment among those cognizant of machine-shop conditions.

Even the gradual release of accumulated machines will result inevitably in a slackening of production by the builders, is the firm belief of more than one experienced dealer. A number of tool builders have been reducing forces already; the cut in the case of some medium-sized plants amounting to about 50 per cent.

Automobile makers have been buying a few tools of late, creating a rather optimistic atmosphere in the Detroit market. Faith is everywhere firm in the appearance sooner or later of a steady demand from plants re-establishing the production of regular peace goods on a full normal schedule. Present transactions are greatly reduced from November sales; and purchasing for the balance of the year is regarded as of small proportions relatively.

Labor conditions are generally quiet. Common labor is reported more plentiful; but skilled workers are still scarce. Union machinists at Hamilton, Ohio, are quitting work one hour ahead of time in order to enforce an 8-hr. day. The underlying trouble there is a demand for the short day with 10c. per hr. advance.

An increase is noted in the number of inquiries from abroad. Most of these are taken to indicate that dealers in Europe are endeavoring to prepare quickly for what some of them apparently estimate will be a good volume of business.

The Emergency Fleet Corporation has issued stop-work orders on the construction and equipment of the Government marine boiler shop being erected by the Newport News Shipbuilding & Dry Dock Co., at Richmond, Va. This is taken to be a continuation of its policy of economy.

The situation in the Pacific Northwest has been greatly improved by the Government announcement that shipbuilders there may build wooden carriers for foreign interests. More than 4000 shipwrights in wooden shipbuilding plants had been laid off the past week, resulting in a disorganization of the industry.

New York

NEW YORK, Dec. 17.

In view of the overturn of industry, going business is not of inconsiderable volume. The number of plants actively pushing along production plans to meet the return of normal peace demands is regarded as reassuring. One of the largest local supply and machinery houses reports November transactions amounting to two or three times immediate pre-war figures, and that while its December business fell off considerably from the preceding month, it was nevertheless of good volume. The Charlestown, Mass., Navy Yard continues to purchase. The Carrie Gyroscopic Co., 216 William Street, New York, building ship's chronometers, is buying additional equipment; and will shortly remove to new quarters on Thirteenth Street. One of the largest fuse makers in this section has extended contracts which expire Jan. 1, March 1, and June 1.

The McClintic-Marshall Construction Co., Pittsburgh, is asking bids f.o.b. Baltimore on traveling cranes, 1 10-ton 3-motor 70-ft. span, 1 10-ton 4-motor 57-ft. 11½-in. span, 1 10-ton 4-motor 46-ft. span, and 1 20-ton 4-motor 70-ft. span.

Charles Haas, 50 East Fortieth Street, New York, consulting engineer, is receiving bids on 4 30-ton and 2 10-ton gantry cranes and 1 30-ton titan crane, for harbor works in Morocco, in connection with which he sails for France, Dec. 21.

Recent specifications issued for crane equipment by the Pennsylvania Railroad include: 1 5-ton 28-ft. lift 44-ft. span electric gantry for ash-pit service; 1 10-ton 3-motor 26-ft. lift 60-ft. span overhead traveling crane; 1 5-ton 3-motor 20-ft. lift 28-ft. span crane; and 1 5-ton 3-motor 29-ft. lift 59½-ft. span crane.

The Oltmer Iron Works, Hoboken, N. J., is considering the purchase of either a 5-, 7½- or 10-ton 47-ft. 10-in. span overhead traveling crane.

The Emergency Fleet Corporation has issued stop-work orders on the buildings and equipment for the marine boiler shop being constructed for it by the Newport News Shipbuilding & Dry Dock Co., Newport News, Va., at Richmond, Va. This is taken as definite notice that the Government abandons the proposition. The crane equipment for the plant amounted to about \$140,000 alone.

The W. G. Hawes Foundry Equipment Co., 44 Steuben Street, Brooklyn, has had plans prepared for the erection of a new one-story shop, 50 x 100 ft., on Steuben Street, near Park Avenue, to cost about \$7,500.

The New York Insulation Co., Brooklyn, has been incorporated with a capital of \$10,000 to manufacture machinery for the production of flange joints, asbestos specialties for insulation, etc. J. J., M., and J. Sullivan, 482 Tompkins Avenue, Brooklyn, are the incorporators.

The L. W. Mulford Co., New York, has been incorporated with a capital of \$50,000 to manufacture auto trucks and parts. L. W. Mulford, M. Hertz, and H. M. Hessberg, 44 Court Street, Brooklyn, are the incorporators.

The Jupiter Machine Mfg. Co., 77 Delevan Street, Brooklyn, has increased its capital from \$50,000 to \$100,000.

The American Rule Mfg. Co., Brooklyn, has been incorporated with a capital of \$20,000 to manufacture rules and other mechanical specialties. F. Jerum, S. Aripatch and S. Rosen, 694 Eastern Parkway, are the incorporators.

The Republic Auto Parts Co., New York, has been incorporated with a capital of \$50,000 to manufacture auto parts. S. Brand, R. W. Russell and F. Kastenbaum, 3647 Broadway, are the incorporators.

The Century Steel Co. of America, 22 Clarke Street, New York, has increased its capital from \$750,000 to \$1,500,000.

The Bureau of Yards and Docks, Washington, is planning for the construction of a new power plant at its naval magazine works, New York Harbor, to cost about \$150,000. It is also preparing plans for the erection of a naval aircraft station, with aeroplane shop and construction buildings on Long Island to cost about \$800,000.

A. M. Sheard, 25 West Broadway, New York, has been incorporated as the A. M. Sheard Co., with capital of \$50,000, to manufacture engines, boilers, machine shop and foundry equipment. A. M. Sheard, J. M. Vincent and E. M. Simon are the incorporators.

The Emerson-New England Co., Inc., New York, has been incorporated with a capital of \$75,000 to manufacture talking machines. M. C. Flanagan, 140 Nassau Street, M. Dewitt, 287 East Eighteenth Street, Brooklyn; and H. M. Van Aken, Port Ewen, Ulster County, N. Y., are the incorporators.

The Arnold-Hellmuth Mfg. Co., Brooklyn, has been incorporated with a capital of \$50,000 to manufacture machine tools and machinery. A. W. and R. L. Arnold and K. P. Hellmuth, 1723 Eighth Avenue, Brooklyn, are the incorporators.

The Charles F. Biele & Sons Co., 379 West Twelfth Street, New York, manufacturer of show cases, etc., has leased the three five-story buildings at 379-81 West Twelfth Street for a term of years to be occupied as a manufacturing works.

The Brockway Motor Truck Co., 692 Eleventh Avenue, New York, manufacturer of motor trucks, has leased the entire building at 544-46 West Thirty-eighth Street for a term of years, as a branch establishment.

The International Portland Cement Corporation, 347 Madison Avenue, New York, is arranging plans for the reorganization of the company under the name of the International Cement Corporation, with capital of \$2,500,000 and incorporation under Delaware laws. The new company will take over the present organization and its plants, which include cement works in the Argentine Republic and in Cuba. The increased capitalization will provide for improvements and general expansion.

The property of the Bosch Magneto Co., 223 West Forty-sixth Street, New York, at Springfield, Mass., has been purchased by H. C. Griffiths, New York, at the sale held by A. Mitchell Palmer, alien property custodian, for a consideration of \$4,150,000. The sale includes the entire capital stock, plant, machinery and equipment, as well as patents.

Reduced operations are now under way at a number of the shell plants in the vicinity of Perth Amboy, N. J. The Hercules Powder Co. Parlin, has reduced its force by about 1500 men, and is now operating its plant for the production of smokeless powder. The E. I. du Pont de Nemours & Co. works at Parlin and Runyon are also reducing the number of operatives, and it is said that the last noted plant will be used for the production of other products. The Government works at Metuchen, including the Raritan Arsenal and assembling plant at Bonhamtown, are continuing production operations, and a call has been issued recently for more men at these plants. About one-half the regular operating force is now being employed at the Government works at Morgan Station, operated by T. A. Gillespie & Co.

The Hygeia Respirator Co., 32 Monroe Street, Passaic, N. J., has been incorporated with a capital of \$35,000 for the manufacture of respirators, including gas masks and other specialties. Nathan Schwartz and Leopold Schwartz are the incorporators.

The United Auto Body Mfg. Co., Rahway, N. J., has been incorporated with a capital of \$10,000 to manufacture auto bodies and auto parts. Andrew Zboray, G. Pehalm and Julius Fulos, Rahway, are the incorporators.

The Vulcan Iron Works, foot of Morris Street, Jersey City, N. J., has filed plans for the erection of a one-story addition on Essex Street, to cost about \$8,000.

The Board of Boulevard Commissioners, Court House, Jersey City, N. J., John J. O'Connor, acting clerk, will receive bids until Dec. 27 for one 2300-2400 volt alternating current generator, 60 cycles, 90-kw., complete with driving pulley, sub-base and field rheostat; one direct current, 125-volt exciter; electrical instruments and other auxiliary equipment.

The Streichert Radiator Co., Jersey City, N. J., has been incorporated with a capital of \$100,000 to manufacture radiators for automobiles and tractors. Grover D. Carey, William Sewell and Charles Gormley, Jersey City, are the incorporators.

Effective Dec. 16, the Ford Motor Co., Detroit, Mich., resumed the construction of its plant at Kearny, N. J. By arrangement with the Navy Department, all structures erected will be taken over by the company for its new automobile assembling works. The largest structure, 800 ft. long, will be the main assembling building, with smaller adjacent shops. The plant will be completed as it stands and no additional buildings erected at the present time. It is expected to be ready for occupancy by the middle of January with machinery and equipment to provide for the assembling of about 250 cars per day.

E. I. du Pont de Nemours & Co., Newark, N. J., have filed plans for the construction of a new brick and steel building, one story, about 100 x 200 ft., at its works, Vanderspool Street and Avenue B, to cost about \$45,000.

The Standley Non-Skid Chain Co., Newark, has been incorporated with a capital of \$25,000 to manufacture chains. William J. Wurster and Victor A. Wurster, 281 Park Avenue, Orange, and Frank J. Schaub, 87 Tappan Avenue, Belleville, are the incorporators.

The Inland Machine Works, New York, has leased quarters in the American-Circle Building, for new offices.

The Hudson Shipbuilding Corporation, Tarrytown, N. Y., has commenced the construction of a one-story plant to cost \$20,000.

Buffalo

BUFFALO, Dec. 16.

The J. P. Devine Co., 1372 Clinton Street, Buffalo, manufacturer of vacuum cleaning apparatus, has filed plans for the construction of a machine shop to cost \$9,000.

The American Radiator Co., Buffalo, is continuing the operation of its works on Elmwood Avenue for the manufacture of hand grenades. Production is now averaging about 50,000 grenades a day compared with a daily output of about 60,000 during the war. It is said that there is no indication of a cancellation of present orders, and the plant will fulfill all existing contracts with the War Department.

The Buffalo New Method Molding & Metallic Corporation, Buffalo, recently incorporated, has acquired a foundry at 87 Brayton Street and will manufacture castings under a new method of molding, using a compound perfected by William Hoffman, Buffalo, instead of molding sand. It plans to inaugurate operations at the new plant early in January. Ernest Mills is president; William Richardson, vice-president; and Allen Hamlin, secretary and treasurer.

Among the Buffalo industrial companies which are planning to maintain their present working forces are the Buffalo Belting & Weaving Co., and the Atterbury Motor Car Co., Elmwood Avenue. This latter concern is understood to have completed plans for the erection of an addition to its plant at Elmwood and Hertel avenues. About one-third of the work at the plant of the Buffalo Foundry & Machine Co., Fillmore Avenue and East Ferry Street, for the Government, has been canceled or held up until further notice, and it is understood that the company is arranging plans for operations on a pre-war basis. Henry D. Miles is president.

Frank J. Learman, Buffalo, operating a machine shop at 150-54 Ellicott Street, is specializing in cast iron brazing work in addition to a general machine business. A complete equipment has been installed to handle machinery construction and repair work.

The Public Service Commission, Second District, New York, has granted permission to the Niagara Falls Power

Co., Niagara Falls, N. Y., to issue bonds for \$2,000,000 under a mortgage executed by the Hydraulic Power Co., the proceeds to be used for power plant extensions and betterments. It is proposed to build an addition to power house No. 3, installing new electric and hydraulic machinery.

The Emco Mfg. Co., Binghamton, N. Y., has been incorporated with a capital of \$100,000, to manufacture motors, automobile accessories and similar products. E. T. Archese, S. W. Botnick and T. J. Mangan, Binghamton, are the incorporators.

The H. H. Franklin Mfg. Co., South Geddes Street, Syracuse, N. Y., has arranged operating plans to provide for a production of 60 completed automobiles weekly at its works, gradually increasing this output until a maximum of 200 completed cars are turned out in this period. It is expected to operate on this latter basis early in the coming year.

The Fancher Flexible Shaft Co., Syracuse, N. Y., has been incorporated with a capital of \$25,000, to manufacture metallic shafting, engines and machinery. S. J. Pearlman, M. G. Melvin and C. Cooper, Syracuse, are the incorporators.

The Hessler Foundry & Machine Co., Mitchell Street, Oswego, N. Y., manufacturer of brass and iron castings, etc., is taking bids for rebuilding its one-story foundry, 60 x 260 ft., recently destroyed by fire.

The Emblem Mfg. Co., Angola, N. Y., manufacturer of motor cycles and bicycles, has increased its capital from \$10,000 to \$130,000.

The Medina-Hoke Tractor Co., Medina, N. Y., has been incorporated with a capital of \$80,000 to manufacture agricultural machinery. J. C. Posson, D. C. Munson and T. H. Agnew, Medina, are the incorporators.

The German Rock Asphalt Co., Buffalo, has let contract to the Eastern Concrete Steel Co., Buffalo, for the erection of a two-story plant at Kensington Avenue and the New York Central Railroad Belt Line, for crushing stone and mixing asphalt.

The Metal & Alloys Specialty Co., Elmer Rae, vice-president and general manager, 25 Illinois Street, Buffalo, will add three buildings, 60 x 100 ft., 40 x 40 ft., one story, and 15 x 35 ft., three stories, to the plant which it recently purchased and is equipping at Elmwood and Hertel avenues and the Erie Railroad.

The Acheson Graphite Co., Niagara Falls, N. Y., C. A. Tryon, manager, has let contract to the John W. Cowper Co., Buffalo, for the erection of an addition to cost \$15,000.

The New York Central Railroad Co., George W. Kittredge, engineer, Grand Central Station, New York, has let contract for the construction of a drop pit car shop at Utica, N. Y., 40 x 150 ft.

The Buffalo Aeroplane Corporation, Buffalo, N. Y., is in the market for No. 2 plain and universal boring mills, hand milling machine, small vertical slotting machine, 5/8 in. screw machine, chucking machine and other used machine shop equipment.

The Seneca River Power Co., Syracuse, N. Y., has increased its capital stock from \$50,000 to \$100,000.

The Canadian-Chicago Bridge & Iron Co. has purchased a site with 600 ft. frontage on the Niagara River, Bridgeburg, Ont., opposite Buffalo, where it is building a shipyard and docks. The company has a contract for building 12 steel coal barges for the Navy Department.

New England

Boston, Dec. 16.

Warnings are circulated that the influenza epidemic is returning to life and that reported cases, though mild, show substantial increases. It is expected that the dearly-bought experience will be sufficient to prevent any such impediment to shop activities as was the former visitation.

A Springfield, Mass., company having purchased much of its small parts from a New Britain, Conn., plant is now filling in the holes left by cancellations by taking over and doing this work, a plan which in this case requires an increase of the force by 150 men. The Springfield Aircraft Corporation, Springfield, Mass., will finish up present contracts. This will take until the spring, when the plant is to be taken over by the Wason Co., its former owner. Amid the various cancellations it is refreshing to find that a very large order has been placed from French sources with a Hartford company. This may be the forerunner of the new business long anticipated from the devastated region. On some work subject to cancellation, but not yet interrupted by Governmental interference, manufacturers are finding employees unusually industrious.

The United States Bureau of Yards and Docks, Washington, has in hand the plans for a galvanizing plant to cost \$50,000, to be erected in the Boston district. The De-

partment is also planning \$2,500,000 for repairs and improvements of marine barracks at various locations. Plans are in progress for improvements to cost \$188,000 to the power plant and distributing system at the Portsmouth Navy Yard. The sum of \$18,000 is also contemplated to be spent on a locomotive and crane house and \$14,000 in other improvements at New London, Conn., for which drawings are being made. Bids are being received on a boiler house, \$45,000, at Chatham, Mass.

Factory alterations to cost \$10,000, one story, are about to begin by the Morgan Construction Co., Worcester, Mass.

Work has begun on a \$12,500 one-story garage for the Hood Rubber Co., Watertown, Mass.

Work is well under way on a one-story factory, 69 x 192—14 x 43—30 x 60 ft., to cost \$25,000, at Elmwood, for the New England Supply Co., Providence, R. I.

Plans are being prepared under supervision of Benjamin Harris for a one-story 100 x 400 ft. building, to cost \$40,000, for the H. & H. Foundry Co., Stamford, Conn.

The Elliott Construction Co., Hartford, Conn., is erecting an addition to its plant, one story, 42 x 128 ft., to cost \$10,000.

Charles B. Manville, president of the National Sales Co., Boston, and of the Hobbs Mfg. Co., Worcester, Mass., announced on Dec. 10 his company's intentions to greatly enlarge the plant at Worcester, but is not yet ready to give details of the plans contemplated.

About \$50,000 will be spent on power house and dam for the Burmus Paper Co., West Dudley, Mass.

Baltimore

BALTIMORE, Dec. 16.

The Norfolk-Hampton Roads Dry Dock & Ship Repair Corporation, Norfolk, Va., recently organized with a capital of \$7,000,000, has purchased property in this vicinity for its proposed works. The site is said to consist of 200 acres of waterfront property, about one-half of which will be used in the coming year for the initial units. The buildings will include machine shops, foundry, general construction and repair shops, as well as a large drydock. The latter will have a capacity of about 10,000 tons; a second drydock is also planned with capacity of 15,000 tons. The new plant, it is understood, will give employment to about 5000 men. J. H. Morgan is president and O. B. Woodridge, secretary-treasurer.

The Norfolk Glass Mfg. Co., Norfolk, Va., is planning for the erection of a new one and two-story plant in the vicinity of Berkley Street, to cost about \$200,000. The initial works will consist of four buildings, equipped with electrically operated machinery, box machinery, conveyor system and other equipment. B. F. Mitchell, Seaboard Bank Building, is the supervising architect.

The Virginia Railway & Power Co., Richmond, Va., is planning for the construction of a hydroelectric power plant on the Appomattox River, near Petersburg to furnish service to different communities in this district.

Fire, Dec. 7, destroyed a portion of the shipbuilding plant of the Spedden Shipbuilding Co., Baltimore, with loss reported at \$200,000.

The Port & Harbor Facilities Commission, Washington, is planning for the installation of eleven coal handling or bunkering machines at Hampton Roads, Va., each with capacity of about 75 tons.

The Bureau of Yards and Docks, Washington, has had plans prepared for the construction of a new power plant at Paris Island, S. C., to cost about \$95,000. New turbo-generating machinery will also be installed at the Hampton Roads, Va., Navy Yard at a cost of about \$120,000.

The Tidewater Tire & Electric Corporation, Norfolk, Va., has been incorporated with a capital of \$25,000 to manufacture tires and other specialties. J. W. H. Greene and Seemee Chapman are the incorporators.

The Georgia-Alabama Power Co., Lexington, N. C., has been incorporated with a capital of \$3,000,000 to build a hydroelectric power plant with transmission and distributing system. J. E. Foy and Dermott Shemwell, Lexington, are the incorporators.

The Magnolia Electric Light & Power Co., Magnolia, Del., has been incorporated with a capital of \$10,000 to construct a power plant. John B. Lindale, James Martin and George W. Collins, Magnolia, are the incorporators.

The Interstate Belting & Packing Co., Birmingham, Ala., has been incorporated with a capital of \$150,000 to manufacture belting and similar specialties. W. J. Young is president.

The Southern Endless Belt Co., Petersburg, Va., plans

the construction of a one-story building, 40 x 125 ft., to cost \$5,000.

The Camp Mountain Timber Co., Pineola, N. C., wants prices on gasoline engines. F. H. Nagle is president.

Prices on drills, lathes, planers and acetylene welding machinery are sought by Charles N. Wrenshall, Hendersonville, N. C.

Hackley Morrison, Moore Building, Richmond, Va., wants prices on 5 hp. 500-volt motors.

Plans are being made by the Southern Wire & Iron Works, Atlanta, Ga., to enlarge its foundry.

A. C. Brittain, Aliceville, Ala., wants prices on 40 or 50-hp. tubular boilers.

Pittsburgh

PITTSBURGH, Dec. 16.

The Carbon Steel Co., Pittsburgh, has filed plans for the erection of a one-story machine shop and mill to cost \$89,300, and mill building to cost \$41,500. The company has also arranged for the construction of a third mill building to cost \$31,300.

The Pennsylvania Lines West, Pittsburgh, is building a new engine house and shops at Dennison, Ohio, to cost about \$250,000. It is also planning for the construction of new locomotive and car shops and new yard facilities at Wells-ville, Ohio, estimated to cost in excess of \$1,000,000.

The McKenna Brass Co., First Avenue and Ross Street, Pittsburgh, is resuming operations at its plant on a pre-war basis, and is said to have orders on hand to provide for full operations for some time to come.

The one-story shop building being constructed by the Pittsburgh Mining Machinery Co., Pittsburgh, will be used for rebuilding and repairing coal mining machinery. It is understood that the company will remove considerable shop equipment now at Tunnelton, Pa., to the new location.

The Elkins Box Co., Elkins, W. Va., is planning for the rebuilding of its plant recently destroyed by fire with loss estimated at \$150,000.

The West Virginia Aircraft Co., Wheeling, W. Va., is planning for the conversion of its works into a plant for the manufacture of toys, following the completion of Government contracts.

The Parkersburg Rig & Reel Co., Parkersburg, W. Va., recently increased its capital from \$100,000 to \$500,000. H. J. Lockhart is president.

The Bureau of Yards and Docks, Washington, has had plans prepared for the construction of a new boiler and superheater plant at Charleston, W. Va., to cost about \$120,000.

Philadelphia

PHILADELPHIA, Dec. 16.

William Sellers & Co., Inc., 1600 Hamilton Street, Philadelphia, manufacturer of machine tools, etc., has had plans prepared for the erection of a five-story, reinforced concrete addition, 52 x 108 ft.

The Barrett Mfg. Co., Margaret and Bermuda streets, Philadelphia, has filed plans for the construction of an extension, 42 x 55 ft., and 40 x 42 ft.

Henry Disston & Sons, Inc., Tacony, Philadelphia, manufacturer of saws, files, etc., has acquired a tract of about 8 acres, on the southeast side of Tacony Street, in the vicinity of its works, for later expansion. The site is assessed at \$40,000.

The Walworth Mfg. Co., Boston, Mass., manufacturer of iron and brass steam specialties, wrenches and other products, has purchased a large machine shop at Philadelphia, to be used as a branch works. Howard W. Coonley, now acting as vice-president of the Emergency Fleet Corporation, is president of the company.

The R. H. Beaumont Co., Inc., Drexel Building, Philadelphia, conveying and hoisting equipment, formally opened its new building at 315 Arch Street, Dec. 14.

The Philadelphia & Reading Railroad, Philadelphia, will build a new pumping plant at Bethlehem, Pa., for a water supply system.

The Hutchinson Storage Battery Co., Trenton, N. J., recently incorporated with a capital of \$50,000 to take over the company of the same name at 230 South Warren Street, is considering the construction of a new and larger plant for the manufacture of storage batteries. Charles A. Hutchinson is president, and John Hutchinson, secretary and treasurer.

The Camden Iron Works, Camden, N. J., has awarded a

contract to Lewis T. West, 826 Broadway, for rebuilding its one-story pattern shop, 75 x 200 ft., on Ringold Street, to cost about \$10,000. The structure was recently damaged by fire, with loss reported at \$50,000, including equipment.

The Sharpsville Boiler Works, Sharpsville, Pa., has increased its capital from \$50,000 to \$100,000. The company is building two additions to its works, 50 x 75 ft. and 30 x 75 ft., the former to be used as an extension of the power plant.

The International Fabricating Corporation, Wilkes-Barre, Pa., has had plans prepared for the construction of a two-story addition, 50 x 160 ft., at its works at Forty Four Pa., to cost \$60,000.

The Marlin Arms Co., Braeburn, Pa., has commenced the construction of a one-story addition to its plant, about 80 x 160 ft.

The Bryden Horse Shoe Works, Allentown, Pa., has placed its plant No. 4 on a double time basis for capacity operations. Plants Nos. 1, 2 and 3 are now working, and it is proposed to place plant No. 5 in operation when a sufficient number of men can be obtained. The works are located on Front Street, Catasauqua, near Allentown.

The Bonney Vise & Tool Works, Meadow and Tilebarn streets, Allentown, Pa., manufacturer of iron and steel forgings, etc., is operating its plant on a 55-hr. week basis, day shift, and 62½-hr. schedule, night shift. The company is planning to increase its force at the machine shops.

Chicago

CHICAGO, Dec. 16.

The market cannot be called lifeless, but it is everywhere admitted that few inquiries are coming out and equally few sales. This is to be expected in view of recent cancellations of war contracts and because of the intense interest taken by producers and consumers in the course to be pursued by prices, not yet fully developed, although producers see no justification for any reduction in the near future. With material costs at high figures, and much under contract at these prices, while labor also maintains its high level, they see no basis for lower prices before next June at least.

New manufacturing enterprises are few, but after the first of the year it is probable they will begin to spring up, especially in the smaller towns whose hopes for industrial expansion have been repressed since the United States entered the war. As matters are, local civic commercial organizations are showing new life.

The Semi-Steel Test Foundry Co., 2916 Bloomingdale Avenue, Chicago, is planning to erect next spring a one-story foundry, 50 x 85 ft., to cost \$10,000.

It is reported that the Johns-Manville Co., which intends the construction of a \$3,000,000 plant at Waukegan, Ill., will be delayed until next spring, at least, in beginning building operations, for the reason that several acres are to be filled in, work which a sand pump cannot perform satisfactorily in winter. When the plant is built it will be devoted to the manufacture of asbestos goods, electrical supplies and automobile accessories. It is expected that H. J. Esser, 402 Campbell Building, Milwaukee, will draw the plans.

The Victor Mfg. & Gasket Co., John H. Victor, president, has purchased a tract of 138,475 sq. ft. in West Twelfth Street, Chicago, on which a one and two-story factory will be built at a cost of \$250,000, plans for which are being drawn by Alfred S. Alschuler, architect, 28 East Jackson Boulevard. The company specializes in gaskets for gas engines.

The Goodman Mfg. Co., 4800 South Halsted Street, Chicago, has been granted a permit for the erection of a one-story machine shop, 145 x 175 ft., to cost \$45,000.

Several disastrous fires have occurred in industrial plants in the Chicago section in the past few days. At Joliet, Ill., the power house of the public service company was destroyed Dec. 21, the loss being \$500,000. At Racine, early this month, the plant of the Maibohm Motors Co. suffered a loss of about \$300,000, almost \$250,000 of which was on machinery, stock and material. The company employed 70 men. It was getting in stock for increased production, its output for the coming year having been sold. At Minneapolis, also early in December, the shell casing plant of the Minneapolis Steel & Machinery Co. was damaged by fire to the extent of about \$500,000, of which \$400,000 was to stock.

The International Machine Co., 2614 West Sixteenth Street, Chicago, has awarded a contract to the Scown Building Co., 36 West Randolph Street, for the construction of a two-story addition to its machine shop, to cost \$6,000.

Milwaukee

MILWAUKEE, Dec. 16.

A fair amount of new business is being booked by local machine-tool manufacturers, while inquiries form a large volume and presage the placement of large orders immediately after Jan. 1. The amount of work canceled or held in abeyance since the cessation of hostilities is relatively very small and not of sufficient volume to create the least disturbance. Milling-machine manufacturers are especially hopeful of the future. Automobile, truck and tractor industries, including gas engine makers, are buying millers in single tools or small lots and inquiries indicate that some lots of considerable size are in prospect.

The labor situation is quiet and in some respects easier. Common labor is more plentiful, but skilled workers are still scarce.

The Sterling Wheelbarrow Co., Milwaukee, will expend between \$45,000 and \$50,000 in the construction and equipment of an addition at Sixty-fourth and Pullen avenues, West Allis. Plans have been completed by Klug & Smith, consulting engineers, for a brick, steel and concrete building, 125 x 300 ft., part two stories for offices. The company manufactures steel wheelbarrows, foundry flasks and similar goods. Irving R. Smith is president and treasurer.

The E. C. Tecktonius Mfg. Co., Racine, Wis., manufacturer of hardware specialties, has plans for a two-story addition, 100 x 160 ft., with a wing, 50 x 80 ft., of reinforced concrete, steel and brick. The work is to be undertaken early next spring. D. R. Davis, Racine, is architect. The estimated cost is \$50,000.

The Osborne Casting Co., Racine, Wis., will begin work at once on the erection of a \$20,000 addition to its foundry, core room and auxiliary buildings. Charles G. Holmes is general superintendent.

The Saturn Spring Tire Mfg. Co., Racine, Wis., has been incorporated with a capital stock of \$10,000 by Martin C. Weiss, Louis S. Branson and Martin Rasmussen, to manufacture automobile and truck tires, devices and specialties.

The Board of Industrial Education, Marshfield, Wis., will call for bids immediately after Jan. 1 for the construction of the first unit of a new central continuation school, plans for which have been completed by Childs & Smith, architects, Peoples Gas Building, Chicago. The building will be of reinforced concrete, brick and steel, two stories and basement, 50 x 125 ft., and cost about \$75,000. P. J. Kraus is secretary of the board.

The Wisconsin & Northern Railroad Co., Appleton, Wis., has awarded the general contract to Henry Boldt & Co., Appleton, for the construction of a roundhouse, machine shop and storage building for its new terminal in that city.

The Hewitt Machine Co., Neenah, Wis., has merged its interests with those of the Myhre Machine Co., Neenah, and the business will be continued under the Hewitt name. Mr. Myhre becomes associated with Mr. Hewitt in the ownership and management. The Jamieson water power property has been acquired and will be developed further for operating the Hewitt plant.

The R. B. Lang Mfg. Co., Racine, Wis., manufacturer of hardware specialties, novelties, sheet metal stampings and nickel plating, sustained an estimated loss of \$25,000 by fire at its plant at Eighteenth Street and Holborn Avenue, Dec. 7. The main shop was considerably damaged. Reconstruction will begin at once. R. B. Lang is president and general manager.

The American Air Refrigerator Co., Milwaukee, has been incorporated with a capital stock of \$25,000 by Frank L. Ludwig, William J. Connell and H. N. Haynes to manufacture patented refrigerating and cooling devices.

The Perfex Radiator Co., Racine, Wis., manufacturer of automobile, truck and tractor radiators and cooling systems, will proceed with the erection of a new plant at Eighteenth Street and Flett Avenue, early next spring. Plans for the project were completed a year ago and involve an investment of \$100,000 in buildings and machinery. Contracts will be awarded immediately after Jan. 1.

The Royal Mfg. & Foundry Co., Oshkosh, Wis., has been incorporated with a capital stock of \$30,000 to take over and develop the business of the Schloemer Mfg. Co., 388 Division Street, Oshkosh. The company operates a foundry, pattern shop, welding and cutting, plating and general metal specialty plant. The officers are: President, Frank Clark; vice-president and general manager, R. P. Hainsworth; secretary and treasurer, P. J. Schloemer.

The International Toy Co., Eau Claire, Wis., has been organized with a capital stock of \$100,000 and is establishing a factory for the manufacture of express wagons, doll cabs,

sleds, kindergarten equipment, etc., of metal and wood. The officers are: President, L. D. Pangborn, Eau Claire; vice-president, Dr. S. P. Woodward, New York; secretary and treasurer, A. P. Hansen, Eau Claire; directors, R. L. Meader and J. J. Ott. Mr. Pangborn retires as chief designer of the mechanical goods department of the Gillett Rubber Co., Eau Claire, to take charge of the new company. Dr. Woodward is president of the Gillett company.

The Board of Education, West Allis, Wis., will proceed with the erection of a new high school building costing \$280,000, which was delayed by wartime conditions. Bids will be taken soon by Robert A. Messmer & Brother, 1004 Majestic Building, Milwaukee, architects, for a three-story reinforced concrete, steel and brick structure, 177 x 276 ft., with a separate boiler house and power plant. The school will contain an auditorium, swimming pool, gymnasium and manual training department.

The Rockton Moulding Sand Co., Rockton, Ill., near Beloit, Wis., suffered a loss of \$7,500 by fire on Dec. 9. Most of the hoisting, conveying and loading machinery were badly damaged. Several months ago the company sustained a serious loss by fire.

A. W. Priest, Appleton, Wis., has bid in the plant, consisting of a foundry and machine shop, and property of the Killen-Straight Mfg. Co., for \$22,000 at receiver's sale, and will utilize it for the manufacture of pumps, blowers and similar machinery. The Killen-Straight company manufactured farm tractors and was placed in charge of C. L. Marston, as receiver, in June, 1918.

The LaCrosse Tractor Co., LaCrosse, Wis., is reported to have under consideration plans for extensions and other enlargements costing \$100,000. Details have not been announced. B. F. Hamey is vice-president and general manager.

The General Mfg. Co., Milwaukee, has been organized with a capital stock of \$100,000 to manufacture talking-machines, musical instruments and supplies. The organizers are represented by Michael Levin, 433 Caswell Block, and Joseph G. Konop, attorneys, Milwaukee, and their identity will not be divulged until the program has been completed.

The Ranahan Iron Works, Milwaukee, has been incorporated with a capital stock of \$10,000 to do a general mechanical engineering business. The incorporators are John P. Ranahan, Thomas E. Leahy and Herbert R. Manger, attorneys, 69 Wisconsin Street.

Detroit

DETROIT, Dec. 16.

Machine-tool dealers report that the conversion of industrial plants from a war to a peace basis is indicated in the rapidly growing volume of orders. While the Government is still a heavy buyer in this district, the majority of plants are well under way in their regular production and are taking advantage of the opportunity to replace old machinery for more modern equipment. Many automobile concerns are anticipating immediate enlargements.

Local industrial leaders are planning to take back the men who have been in their country's service and still retain those now in their employ. The employment of women will be slightly curtailed to take care of the returned men, but increased production is expected to be sufficient for most of them.

The Clark Engine & Boiler Co., Kalamazoo, has been purchased by new interests with the following officers: President, J. A. Sheldon, chief efficiency engineer Buick Motor Co., Flint; vice-president, Edward R. Grace, vice-president the Michigan Manufacturer & Financial Record, Detroit; secretary, B. L. Winchell, Jr., Western manager Kerite Insulated Wire & Cable Co., Chicago; treasurer, J. A. Gordon of the Automatic Transportation Co. and Walker Vehicle Co., Detroit; general manager, E. A. Barnes, Kalamazoo, formerly efficiency engineer Buick Motor Co., Flint. The entire land area embraces more than 100,000 sq. ft. at Willard, Church, Ransom and Parks streets. In addition are all the factory buildings, with a floor space of about 70,000 sq. ft., including equipment and material on hand.

The National Twist Drill & Tool Co., Brush Street and Grand Boulevard, Detroit, has awarded a contract for a two-story factory.

The Marquette plant of the General Motors Corporation, Saginaw, will be converted into a farm tractor manufacturing plant, according to a statement by Secretary Kerby of the Saginaw Board of Commerce. Tractor manufacturing, however, will not begin until all Government contracts are completed. It is reported that the company contemplates manufacturing some of the parts for its Samson tractor at this plant.

The Lockwood Ash Motor Co., Jackson, manufacturer of marine motors and Sterling spark plugs, has acquired the

old Ruby plant to extend its manufacturing facilities. The company is capitalized at \$100,000 and employs 50 men. Arthur L. Lockwood is president; W. L. Ash, vice-president, and Fred T. Lockwood, secretary-treasurer.

The Puritan Machine Co., Detroit, has purchased the service, repair parts business and complete stock of parts, tools, jig, dies and blueprints of the American Ball Bearing Co., Cleveland, covering all of its axles manufactured previous to Jan. 1, 1918. The stock is being transferred to the Puritan plant on Lafayette Boulevard, Detroit.

D. M. Hamilton, assistant treasurer of the Detroit Brass Works for eight years, and W. C. Renshaw of the same company for 18 years, part of the time as general superintendent and more recently factory manager for McKee & Roberts Co., have purchased the controlling interest in the U. S. Novelty Mfg. Co., changed its name to the Acme Brass Works and increased its capital to \$50,000. Mr. Renshaw is vice-president and will have full charge of manufacturing and production. Mr. Hamilton is secretary and treasurer and will handle the sales and executive end of the business.

Frederick Stearns & Co., Jefferson and Bellevue avenues, Detroit, is having plans prepared for the erection of an eight-story addition to its plant, 75 x 100 ft., to cost \$200,000.

The Cleveland-Cliffs Iron Works, Marquette, Mich., is considering the erection of a new hydroelectric power plant to be used in connection with its works in this vicinity. Headquarters of the company are at Cleveland.

The John Brennan Co., Twenty-fourth Street and Michigan Central Railroad, Detroit, manufacturer of steam boilers, etc., is building a new one-story addition, 100 x 225 ft., to cost \$75,000.

Cleveland

CLEVELAND, Dec. 16.

No revival of business is as yet apparent in the machine-tool market. Dealers report few live inquiries, and only for single machines. Some manufacturers, however, are feeling the market and announce that as soon as their plants are back on a peace basis they will need additional equipment. Sentiment is quite prevalent among buyers that machine-tool prices may be reduced and some are holding off for this reason. The automobile field is bringing out some orders for special machinery. One local manufacturer who builds drilling machines of a special type for automobile work, has taken a number of orders the past few days and reports that the outlook in this field is very promising. The manufacture of these machines was discontinued some time ago, as they were not used in war work. The demand for punching and shearing machinery is at a standstill.

The Government placed orders the past few days for a number of locomotive cranes and some crane business has come from the shipyards. Some locomotive crane orders for railroads have been canceled by the Government, but the reinstatement of these is expected. Locomotive crane builders are looking for a good demand for dock equipment. Electrical equipment has eased up and machinery manufacturers are now able to get fairly prompt delivery on motors.

The Van Dorn Iron Works Co., Cleveland, is still operating its plant at capacity on fighting tanks for the Government, having received no instructions as yet to discontinue work. Many local plants are operating to a large extent on Government orders, although work for the Ordnance Department has been curtailed about 25 per cent by cancellations.

The Lambert Machine & Engineering Co., Cleveland, has increased its capital stock from \$20,000 to \$150,000. It recently brought out a line of horizontal boring machines and plans to increase the capacity of its assembling department.

The Standard Steel Tube Co., Toledo, Ohio, has acquired a 40-acre site on the Maumee River in the outskirts of that city, where it contemplates building a new plant, increasing its present capacity. As part of its plans the company announces that it will set aside 12 acres and erect homes for its employees. Seven acres will be turned into a park and a civic center will be provided. It is stated that building will be started in the spring. George B. Storer is president.

The K. & Z. Automatic Screw Co., Defiance, Ohio, will remove its plant to new quarters Jan. 3 and add a number of new machines, largely increasing its present capacity.

The Canton branch of the Republic Rubber Corporation, Youngstown, Ohio, will be enlarged to double its present capacity. Plans for the addition have been prepared.

The plant of the Universal Machine Co., Bowling Green, Ohio, was damaged a few days ago by fire that started in the grinding department. The loss is estimated at about \$10,000. It will be rebuilt as soon as possible.

Cincinnati

CINCINNATI, Dec. 16.

Machine tool builders returning from the convention held in New York last week find an increasing number of inquiries from abroad. Most of these indicate dealers in Europe are hastening to get in line for business that, from the tone of their correspondence, may be large. It has been pointed out that there must be many machine tools in Europe that will come back on the market as second-hand, but no information is available as to the condition of these machines and if they will compete seriously with the sale of new ones. This question is debated seriously, but from the meagre information obtainable to-day it would seem that a tacit agreement has been reached with the Government to release machinery from war plants gradually and not dump it on the market all at once.

No one is disappointed in the absence of railroad buying, because this was not expected to begin until probably next spring. It may be that some roads will have to provide shop equipment for replacement before that time. Automobile manufacturers have bought a few machine tools lately, but now appear to have suspended purchases until after the holidays.

Labor released by local plants is not being absorbed in its entirety, but the number of idle men is so far comparatively small. In the face of the slowing down of operations, union machinists at Hamilton, Ohio, made demands last week on three shops for an 8-hr. day, with a 10c. per hr. increase. Although the increase asked for has not been granted the men have been quitting work one hour ahead of the usual time. This method was employed to enforce an 8-hr. day.

The Automatic Electrical Devices Co., 120 Opera Place, Cincinnati, has increased its capital stock from \$10,000 to \$50,000 and will be in the market soon for two small lathes, one punch press and one small milling machine. The company wants now for prompt delivery a 13-in. x 6-in. lathe. C. E. Ogden is president.

The Philip Carey Mfg. Co., Cincinnati, has tentative plans under way for an addition to its plant at Lockland, Ohio. No definite information has as yet been given out.

Among nearby plants that are rearranging for commercial work is that of the Mosler Safe Co., Hamilton, Ohio. The company had a large contract for gun carriages which were being made under the direction of the American Rolling Mill Co.

A movement is on foot at Dayton, Ohio, to organize a selling agency to be known as the Tool Manufacturers' Exchange. The purpose of the organization is to reduce selling costs by co-operation of different manufacturers. Headquarters will be maintained at 1200 U. B. Building. C. W. Saffell is secretary.

The Burnett-Larsh Mfg. Co., Dayton, manufacturer of household water systems, has acquired a large factory on Monument Avenue, in which equipment will be installed at an early date.

The Ford Motor Co.'s assembling plant at Columbus, Ohio, will reopen soon after Jan. 1. It has been engaged on war work.

The Allering Motor Parts Co., Mansfield, Ohio, has been incorporated with \$50,000 capital stock by C. N. Allering and others. Nothing is known as to manufacturing plans.

The Perry Mfg. Co., New Lexington, Ohio, has been incorporated with \$50,000 capital stock by J. Howard O'Loughlin to manufacture feed grinding mills.

Indianapolis

INDIANAPOLIS, Dec. 16.

The Studebaker Corporation, South Bend, Ind., is proceeding with the additions to its plant begun in 1916 and halted to some extent by Governmental restrictions. The enlarged plant will have a capacity of 100,000 motor cars per year.

The Bedford Factory Co., Bedford, Ind., has increased its capital stock from \$15,000 to \$55,000.

Officials of the Nordyke & Marmon Co., Indianapolis, state that the Liberty motor department of their plant will be

closed in a few weeks, at the completion of the Government contract. Of the 2500 employees who will thus be released about 800 will be assimilated in the automobile and flour rolling machinery divisions of the company's plant. During the latter month, were produced 308 Liberty motors.

The Stant Machine Works, Connersville, Ind., whose plant was recently damaged by fire, is now running at full capacity.

The Service Foundry Co., Brazil, Ind., has been organized by H. M. Crawford and others. The new company expects to do a general jobbing foundry business and has taken over a plant on South Depot Street which it will enlarge at an early date.

The Central South

LOUISVILLE, Dec. 16.

The W. P. Brown & Sons Lumber Co., Louisville, will immediately rebuild two band mills, recently burned at Paducah, Mo. With the exception of the boilers the machinery was completely ruined.

The Perfect Combustion Burner & Mixer Co., Louisville, has been incorporated with a capital of \$50,000 to manufacture gas burners. The incorporators are Bruce Halderman, John B. Wintersmith and Frank W. Gault, Jr.

The City Mill & Lumber Co., Louisville, will rebuild the portion of its planing mill, recently burned with a loss of \$25,000. Considerable wood-working machinery was destroyed.

A. C. Britton, Aliceville, Ga., is in the market for a 40-hp. tubular boiler.

The Roy C. Whayne Supply Co., Main Street, Louisville, is in the market for a large jaw crusher with a daily capacity of 1500 tons or over.

The John G. Duncan Co., Knoxville, Tenn., is asking for bidders' prices on second-hand engine lathes, 10 to 12 in. swing, with 6 to 9 ft. bed. Also 12 dump cars, steel or concrete construction, 36 in. gage, 1½ to 2 yd. capacity.

The Lucey Mfg. Corporation, 233 Broadway, New York, and Chattanooga, Tenn., has acquired the works of the Lockout Boiler Mfg. Co. and the Chattanooga Car & Foundry Co., both of Chattanooga, and will consolidate the plants under the name of the Lucey Foundry & Machine Co., which has been incorporated with a capital of \$300,000 to manufacture oil well and other machinery. The company plans to increase the capacity of the former Chattanooga Car & Foundry Co. plant by the installation of a machine shop and other equipment; improvements and extensions will be made to the forge shop as well as to the wood-working plant.

Texas

AUSTIN, Dec. 14.

The Gulf Well Machinery Mfg. Co. will move its foundry and machine shop from South Houston to Fort Worth, where it has purchased 10 acres as a site for a plant. The cost of removal and reconstruction will be about \$250,000, and will consist of machine shop, iron, brass and aluminum foundry, forge, pattern and woodworking shops. A 5-ton steel crane will be installed. Prince Baxter is president.

The proceeds to be derived by the Texas Co., Houston, by increasing its capital stock from \$69,375,000 to \$100,000,000 are to be devoted to building one or more refineries, pipe lines and other improvements.

The Ranger Light & Power Co., Ranger, has been incorporated with a capital of \$20,000 to equip an electric light and power plant. S. C. Green is a stockholder.

The Allied Oil Co., Pittsburgh, Pa., which recently acquired the holdings of the Consumers Oil & Gas Co. in Rockford and Mineral Wells, will lay a pipe line from the central west Texas fields to Fort Worth.

The Evans-Thwing Co. has purchased a tract of 96 acres adjacent to Fort Worth, on which it will erect an oil refinery with a daily capacity of 5000 bbl. It will cost about \$600,000.

The Texas Terra Cotta Co., Fort Worth, has been incorporated with a capital stock of \$50,000 to manufacture terra cotta products. P. E. Miller is a stockholder.

The Texas Steel Products Co., Wichita Falls, Tex., has been incorporated with a capital of \$50,000 to manufacture steel and iron specialties. H. L. Hagerman and A. C. Page are the principal incorporators.

The Dallas Motor Car Co., Dallas, is planning for rebuilding its works recently destroyed by fire with a loss of about \$150,000.

The Bureau of Yards and Docks, Washington, will take bids up to Dec. 30 for the proposed new shops and industrial buildings to be located at Galveston, Tex., at a cost of \$270,000.

St. Louis

ST. LOUIS, Dec. 16.

The Best-Clymer Mfg. Co., St. Louis, will equip a cold storage addition to its plant.

The Sumner Electric Co., Sumner, Mo., A. Stobaugh, manager, is in the market for heavy oil engines and other generating and transmission equipment.

The town of Inverness, Miss., C. E. Wallace, mayor, will install additional machinery in its electric light plant and will receive bids until Jan. 2 for oil engines, pumps, alternators, etc. N. A. Kramer, Magnolia, Miss., is the engineer.

The city of Okmulgee, Okla., will add about \$125,000 worth of new equipment to its electric light and ice plants.

The Ardmore Street Railway Co., Ardmore, Okla., I. M. Putnam and others interested, will equip a power plant in connection with an electric railroad.

The Kiefer Light & Fuel Co., Sapulpa, Okla., is in the market for about \$5,000 worth of machinery.

The Sabine River Lumber & Logging Co., Oakdale, La., has changed its name to the Hillyer-Deutsch-Edwards Co., increased its capital by \$125,000 and will extend its plant capacity.

The T. F. Bailey Co., Jackson, Miss., will equip a \$50,000 saw and planing mill.

The Ingram-Day Lumber Co., Lyman, Miss., will re-equip its burned mill to have a daily production of 125,000 ft. of lumber.

The plant of the Sapulpa Compress Co., Sapulpa, Okla., has been burned. It will be rebuilt and the machinery replaced.

The Winona Cotton Mills, Winona, Miss., is in the market for high speed engines.

California

LOS ANGELES, Dec. 9.

The Friedman Ornamental Iron Works, East First Street, Los Angeles, has been consolidated with the Panama Ornamental Iron Works of the same city under the name of the Friedman-Lowith Iron Works. The new company has been incorporated with a capital of \$50,000 to operate a structural steel and ornamental iron works at 2500-10 Cheney Street. Albert L. Lowith is president; Frank R. Lowith, vice-president; Edward Friedman, secretary, and Phillip Friedman, treasurer.

The Western Pipe & Steel Co., North Broadway, Los Angeles, manufacturer of riveted steel, iron and steel pipe, oil well casing, tanks, etc., has acquired a tract consisting of 130 lots in the Hay district, Vernon, near Los Angeles, which will be used for extensions.

The Pacific Gas & Electric Co., San Francisco, will build a new forge and blacksmith shop at its gas works at Fresno, Cal., recently completed. The shop will be equipped with machinery for the repair and manufacture of tools, pipe, etc. A new pump house will also be erected.

The West Shipbuilding Co., Wilmington, Los Angeles, has filed plans for the construction of a one-story forge and blacksmith shop, 36 x 50 ft.; one-story mold loft, 48 x 156 ft., and one-story addition to its tool shop, 32 x 36 ft.

The Water Department, Los Angeles, has arranged an appropriation of about \$500,000 for extensions and betterments in the municipal water system in the early part of the coming year. The work will include the installation of two new electrically operated pumping plants at city stations; completion of the Haiwee power plant at the Haiwee Reservoir, to consist of a hydroelectric generating station to cost \$65,000; construction work at the San Fernando and Chatsworth reservoirs to cost about \$140,000, and other extensions. William Mulholland is chief engineer.

The Southern Sierras Power Co., Riverside, Cal., a subsidiary of the Nevada-California Power Co., is planning for extensions in its various power plants at Birch Creek, Inyo County. The company operates five generating stations in this locality, known as plants Nos. 2, 3, 4, 5 and 6. The work is estimated to cost about \$85,000.

The Union Oil Co., Union Oil Building, Los Angeles, has taken out a permit to build two additions to its plant on the Wilmington-San Pedro Road, consisting of a one-story machine shop, 24 x 30 ft., and one-story general works building, 30 x 100 ft.

The California Auto Parts & Wrecking Co., Los An-

geles, has been incorporated with a capital of \$75,000 to manufacture automobile parts, etc. M. A. Hays, Walter J. Little and M. A. Nance, Los Angeles, are the incorporators.

W. H., R. F. and W. R. Brooks, Lancaster, Cal., have acquired about 320 acres in Antelope Valley, and plan the construction of an electrically operated community pumping plant.

Canada

TORONTO, Dec. 16.

The cessation of munitions making has eliminated the demand for shell machinery, and it is not expected that the demand for ordinary requirements will show any great activity until the readjustment period is well advanced. Some Canadian dealers have already received inquiries for machinery and tools to be used in peace industries, but it is not anticipated that there will be any great rush on these lines for a few months to come. Dealers in wood-working machinery report that there are indications of good trade at a very early date. One Toronto firm has received inquiries from all over the Dominion for equipment for wood-working factories. Canadian manufacturers are looking forward very optimistically to the possibilities of export trade. Large orders have been placed for agricultural machinery by South Africa, New Zealand, Australia, South American countries and England.

Contracts for the construction of six steel vessels have been closed by the Marine Department, Ottawa, Ont. Two ships of 8100 tons each will be built at Prince Rupert, B. C., by the John L. Mullen Construction Co., a Pittsburgh concern which has leased from the Grand Trunk Pacific Railway Co. its drydock and shipbuilding facilities at Prince Rupert, and contemplates extensive works at this port. The Port Arthur Shipbuilding Co., Port Arthur, Ont., will build two ships of 4250 tons each, which will have to go through the Welland Canal in two sections and be rejoined at Quebec or Montreal. The Nova Scotia Steel Co., New Glasgow, N. S., has the contract for the other two ships, which will be of 2800 tons each.

The wire nail and wire manufacturing plants of the Morrison Steel & Wire Co., Vancouver, B. C., was destroyed by fire Dec. 12 with an estimated loss of \$150,000 on buildings and equipment. It is expected that the plant will be rebuilt without delay. F. W. Wilkinson is one of the owners.

The Galt Foundry Co., Beverly Street, Galt, Ont., has begun the erection of a new machine shop, 60 x 65 ft. It is stated that the company will manufacture sprinkler stokers, etc., and will eventually build a new factory.

The Ford Smith Machine Co., Ltd., Hamilton, Ont., has been incorporated with a capital stock of \$500,000 by Archibald H. Gibson, Gabriel H. Levy, Charles H. Higgins, provisional directors, and others. The company recently erected a plant on Cavell Avenue and is installing machinery as rapidly as possible. Machine tools will be manufactured.

The Renfrew Refrigerator Co., Ltd., Renfrew, Ont., is in the market for one rough rip saw, wood or iron frames; one horizontal belt sander; one tenoning machine, double heads, with coping and cutoff saw attached.

A. F. Hamlyn, Belmont, Ont., is in the market for a two-slide valve engine, 14 x 14 in. or 14 x 18 in. with 8 x 16 in. drive pulley.

The factory owned by the Canadian Electric Products, Ltd., Transmission Avenue, Shawinigan Falls, Que., was destroyed by fire with a loss of \$50,000.

The Stinson-Reeb Builders Supply Co., 45 St. Alexander Street, Montreal, is in the market for a jam crusher with a capacity of 200 tons or more every 10 hours.

The John T. Hepburne Co., iron founder and machinist, 12 Van Horne Street, Toronto, will make alterations and additions to its plant at a cost of \$10,000.

James Armstrong, 110 Mail Building, Toronto, is in the market for second-hand equipment for a small machine shop.

Alexander Carlaw, Shelbourne, Ont., is in the market for a planer, lathe and sawmill, etc.

Dr. A. B. McCallum, chairman of the Council for Scientific and Industrial Research, Ottawa, Ont., has recommended the erection of laboratory building near Ottawa, estimated to cost with equipment \$600,000.

The Canada Metal Co., 37 Fraser Avenue, Toronto, proposes to erect a plant at Halifax, N. S., to cost \$50,000. W. G. Harris, Toronto, is president.

The Laidlaw Bale Tie Co., Burlington Street, Hamilton, Ont., will erect an addition at a cost of \$3,000 and install new machinery. R. T. Laidlaw is manager.

The Society L'Air Liquide, 1 Ernest Street, Maisonneuve, Montreal, is having plans prepared for the erection of a factory to cost \$60,000.

Castle & Son, 538 St. Catharine Street West, Montreal, have purchased a site and will erect a factory to cost about \$80,000. Construction will start early in 1919.

The Siemon Tractor Corporation, New Hamburg, Ont., will remodel its plant and install new machinery. J. E. Siemon is manager.

The Three Rivers Steel Foundry, Ltd., Three Rivers, Que., will make alterations to its foundry and install new machinery. A. B. Charlton is manager and engineer.

Plans are in progress for the erection of new building at the plant of the John Morrow Screw Co., Thames Street, Ingersoll, Ont. The Frio Construction Co., Hamilton, Ont., has the general contract.

Work will start in the near future on the erection of a foundry at Tilbury, Ont., to cost \$5,000, for O. J. Cavanagh. N. Giroux is general contractor.

Work will be started at an early date on the erection of shipyards and a machine shop for the Victoria Machinery Depot, 343 Bay Street, Victoria, B. C., to cost \$350,000.

The Bedford Construction Co., Halifax, N. S., has the general contract for the erection of a one-story concrete power house to cost \$60,000 for the Halifax Shipyards, Ltd., Barrington Street.

The Pacific Northwest

SEATTLE, Dec. 9.

The announcement by the Government that Northwest shipbuilders will be allowed to build wooden carriers for foreign interests is of vital interest in this section. This will offset to a large extent the recent cancellation of Government contracts for 22 wooden freighters in the Washington district. The situation had become extremely serious, in within the past week more than 4000 shipwrights in wooden plants had been laid off, with a resulting disorganization of the industry. Several large wooden shipbuilders, however, are seriously considering the proposition to convert their plants into steel shipyards, believing the steel shipbuilding industry to be on a more permanent and safer basis.

R. M. Whittaker, Hoquiam, Wash., has recently acquired a site in Florence, Ore., for a shipyard. It is reported construction will be undertaken early in the year.

The C. A. Smith Co., Marshfield, Ore., will make improvements and extensions to its power plant at a cost of \$50,000. Four new boilers will be installed. A. G. Stearns is general manager.

The Westerman Iron Works, Seattle, has changed its name to the Bacon-Matheson Forge Co. The personnel of the concern will remain unchanged. Cecil E. Bacon is president.

The Elliott Bay Yacht & Engine Co., Seattle, has been sold to L. T. Sanvik, Jack Tjerandsen, C. B. Winge and M. Sandvik and has been reorganized under the name of the Maritime Boat & Engine Works. The new owners plan to build small craft on an extensive scale.

The Willamette Iron & Steel Works, Portland, Ore., recently received Government contracts for 31 Scotch marine boilers. Two sets are to be shipped to Balboa for installation in two captured German vessels. The Willamette plant has a monthly output of eighteen boilers and has contracts on hand for 160.

The Foundation Co., Portland, is making estimates of the cost of converting its plant from a wooden shipyard to one for building steel ships. It is estimated that five months will be required to make the change. The company has built 16 wooden hulls for the French Government and has been offered contracts for steel vessels from 5000 to 10,000 tons deadweight.

The Pacific Pneumatic Tool Co., Seattle, has been incorporated with a capital of \$50,000 by L. E. Summers, John Garvin and Maurice McMicken.

A. H. Hagen and C. S. Rogers are building a mill installing machinery near Glendale, Ore., to manufacture railroad ties and lumber.

Government Purchases

WASHINGTON, Dec. 9.

Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, at an early date for schedules as follows: Schedule 7457½, for Norfolk squaring shears; 7461½, for Norfolk, 1 plate bending machine; 7462½, for Norfolk, 1 forming machine; 7464½, for Alexandria, Va., 2 3-ton cranes; 7469½, for Alexandria, Va., 1 universal lathe, 2 surface grinders, 2 cutter and reamer grinders and 1 cutter grinding machines; 7479½, for Brooklyn, 270 pneumatic hammers; 7483½, f.o.b. works, 20 grinders; 7486½, for Alexandria, bench lathes; 7496½, Charleston, 1 bolt threading machine.

